

T. C. Lewis, M.D.,
Queen's Own.

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1888

OBSERVATIONS

ON THE

MEANS OF PRESERVING

THE

HEALTH OF SOLDIERS;

AND OF

CONDUCTING MILITARY HOSPITALS.

AND

On the DISEASES incident to SOLDIERS in
the Time of Service, and on the same DISEASES as
they have appeared in LONDON.

IN TWO VOLUMES.

By DONALD MONRO, M.D.

PHYSICIAN to his MAJESTY's Army, and to St. GEORGE's Hof-
pital; Fellow of the Royal College of PHYSICIANS at London,
and of the Royal Society.

V O L. I.

THE SECOND EDITION.

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ON THE

MEANS OF PRESERVING

THE

HEALTH OF SOLDIERS;

AND OF

CONDUCTING MILITARY HOSPITALS

AND

OF THE DISEASES INCIDENT TO SOLDIERS IN
THE LINE OF SERVICE, AND ON THE MEANS OF PREVENTING
THEIR RECOVERY IN HOSPITALS.

IN TWO VOLUMES.

BY DONALD MONRO, M.D.

LECTURER ON MEDICINE, AND OF THE DISEASES OF THE
ARMY, FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS IN LONDON,
AND OF THE ROYAL SOCIETY.

VOL. I.

THE SECOND EDITION.

LONDON.

Printed by J. Murray, at No. 25, in the Strand.
G. Robinson, at No. 1, in Pall Mall.

MCCCLXX.

TO THE

K I N G.

May it please Your MAJESTY,

TO permit me to lay at your
feet the following sheets, pub-
lished with a view to be useful to
those, who hereafter may have the

A

care

care of the health of your MAJESTY'S troops.

YOUR MAJESTY'S particular inquiries into the state of Your Military hospitals, in every quarter of the world, in the time of the late glorious and successful war; Your concern for every officer and soldier who suffered either by sickness or by wounds in the cause of their King and Country; and Your solicitude to procure them every possible assistance and relief, cannot fail to excite the highest admiration of Your MAJESTY'S

good-

goodness in the breast of every subject, and the warmest gratitude in the heart of every foldier.

THE knowlege of these circumstances induced me to flatter myself, that a work of this kind would be agreeable to Your MAJESTY; and should this attempt towards pointing out the means of alleviating those miseries, which necessarily attend a military life in the time of service, be acceptable, I shall obtain the utmost of my wishes; it being the greatest ambition of my heart ever so

vi D E D I C A T I O N.

so to act as to merit Your MAJESTY's
approbation, and to subscribe myself,

May it please Your MAJESTY,

Your MAJESTY's most dutiful Subject,

And most faithful

And humble Servant,

London,
Jermyn-Street,
April 15, 1764.

DONALD MONRO.

P R E F A C E.

AMONG the numerous authors of observations in the art of physic, there are but few physicians, who have attended camps, who have expressly written on the health, and on the diseases most incident to an army in the field. The following work, therefore, seems to have a fair claim to be acceptable to the public, having been compiled during the author's attendance on military hospitals, fitted up for the use of armies, in the time of war; and in order to render it of still farther use, he has, in this new edition, added many observations on the same subjects that have occurred to him in St. George's hospital, and in private practice, for these twenty-two years past; and likewise the remarks and observations of several able physicians and practitioners who have served in our armies and navy in dif-

7
ferent parts of the globe, and which have been either published in books, or communicated to the author by the practitioners themselves.

Of In a commercial country like Great Britain, where numbers of hands are constantly wanted for carrying on manufactures, as well as for cultivating the ground, we have a strong political argument to add to that drawn from the dictates of humanity, why the life of every individual should be most carefully attended to, in order to make as low as possible the number of recruits who must be perpetually drawn off for the service of war; and certainly none deserve more the attention and care of the public, than the officer and soldier, who, in time of war, daily exposes his health and his life for the safety of the state, and for the preservation of the property and liberty of his fellow-citizens.

d
Gentl.

d The author has divided this new edition of his work into five parts.

I. In the first he has endeavoured to point out the means most likely to keep both of-
ficer

ficer and soldier healthy, when employed on different services, and in different climates.

2. In the second he has considered very particularly the manner of fitting up, providing and conducting military hospitals, in different situations, and under different circumstances; sensible that the health and strength of an army often depend on the right management of them.

3. In the third part he has given a short account of the health and diseases of the troops which were encamped at Coxheath *(Kent)* in the years 1778 and 1779.

4. In the fourth part he has treated of the diseases of the sick who came under his care in the military hospitals in Germany last war, and in the hospitals belonging to the camps in England, in the years 1778 and 1779; and in doing of this he has been very particular in mentioning the different methods of cure which he found to be most successful, both in Germany and in England, and likewise those which have been found to answer best by able practitioners in different parts of the world.

In Germany he had not met with one person afflicted with the malignant ulcerated fore throat, and very few ill of the small-pox, and venereal disorder, and therefore had mentioned these disorders very slightly; but as he saw many ill of these complaints at Cox-heath camp, he has considered them more particularly in this new edition of his work; in order to render it more useful to the younger part of the medical military practitioners.

5. In order to avoid the repetition of the composition of particular medicines, and the interruption that would be given to the reader, by their being inserted in the body of the work, the fifth part is made up of a pharmacopœia adapted to the use of military hospitals, to which the author's practice in them was chiefly confined.

It is but justice here to observe, that his serene highness Duke Ferdinand of Brunswick, that great and able general, who commanded the allied army in Germany, did every thing in his power to protect the military hospitals from the insults of the enemy; and that when the malignant fever and dysentery were frequent

quent in the country where the troops were quartered in the winter after the campaign of 1760, he, like a wise and humane commander, *1760.* did not sit an idle spectator of the general calamity, but consulted those about him concerning the methods most proper for keeping the troops healthy, and preventing their being infected with these putrid disorders; and recommended to the army the practice of such of them as were judged the most proper for answering the ends proposed.— And that the late Marquis of Granby, whose *Granby.* memory will be ever dear to the British soldier, as well as the rest of the British general officers employed on the German service, always paid the greatest attention to the soldiers when sick in hospitals, and were particularly ready in giving orders for all such things as were necessary or proper for them. Nor were the honourable Lieutenant-general Keppel, and Lieutenant-general Pierſon, who *Keppel.* *Pierſon.* commanded at Cox-heath camp in the years 1778 and 1779, less attentive to the preservation of the health of the men under their command, and in having them properly taken care of when attacked with sickness.

LONDON, JERMYN-STREET,
1st of MAY, 1780.

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PART I.

OBSERVATIONS

ON

THE MEANS OF PRESERVING THE HEALTH
OF SOLDIERS IN THE TIME OF SERVICE.

SECT. I.

*Of the duties which expose soldiers to the causes
of diseases.*

THE life of British soldiers on service, in time of war, is so very different from what they lead in time of peace, as to subject them to many inconveniences and diseases.

In time of peace, soldiers are quartered either in towns or in garrisons, where they are under the eye of their officers, who take care that they keep themselves clean, and provided with necessaries; they lie either in private houses or in barracks, where they have a good bed,

2 OF THE MEANS OF PRESERVING

bed, regular meals of wholesome provisions, and enjoy most of the other necessities of life in common with the lower class of people; their duty is easy, they mount guard but seldom, and in other nights enjoy an undisturbed rest. /

Whereas, during the time of an active campaign, they are seldom in houses; they lie in tents upon the ground, which is often bare, and at best covered only with straw and a blanket; and sometimes they are obliged, after fatiguing marches in wet weather, to lie on the bare ground, without even a tent to cover them; they must stand centinel, and be upon piquets and other out-posts in the night, during all kinds of weather; besides performing long fatiguing marches, and other military duties; and when near an enemy, they are perhaps on duty every second or third night, besides being on working parties, and doing other duties of fatigue; and what rest they have is interrupted by frequent alarms. They have often but little time or convenience to make themselves clean. Provisions are sometimes scarce, and at other times they can come at none that is wholesome and good, and frequently on long marches they have no opportunity of dressing what they

can
vide Hamilton - contra. - 1794.

can get : water is sometimes difficult to be come at, and what is to be got is bad. And it frequently happens, that neither beer, wine, nor spirits, can be purchased for money.

In fixed camps, they are often exposed to the putrid effluvia of dead bodies, of dead horses, and other animals, and of the privies and of the dung of the horses ; and, in some encampments, likewise to the unwholesome vapours of marshy ground, and of corrupted stagnating water : all which, joined to the other hardships and inconveniences unavoidably attending a military life in time of service, often give rise to numerous diseases, which weaken an army in a most surprising manner ; and therefore commanders ought to use every means in their power, consistent with the necessary military operations, to preserve the health of the soldiers.

Diseases are more or less frequent in armies according as the season is hot or cold, wet or dry ; according to the nature of the climate, and the time of the year in which military operations are carried on ; the nature of the ground on which the army is encamped, or the situation of the towns or villages in which they are cantoned ; the cleanness, neat-

4 OF THE MEANS OF PRESERVING

Hygiene *or* nefs, and dryness of the camp, and of the houses in which the soldiers are lodged; according as the men keep themselves neat and clean, and are supplied with provisions, and good water, good beer, wine, or other fermented liquors; or are well cloathed, and well furnished with straw and blankets; in proportion as the duty is more or less severe; and to the care taken of such as are attacked with sickness; and according to the time they remain encamped on the same ground.

Cold dry weather *or* Soldiers generally enjoy good health in cold dry weather, even during the time of severe frost; if they keep themselves clean and be kept in exercise, be well cloathed, and well supplied with provisions and good liquors, and with wood for fire; as the troops both in Germany and North America, experienced during the late war: but cold joined to moisture was observed always to be productive of diseases.

or Mere heat of itself is not such an enemy to health * as is generally apprehended; this

only * Dr. Naesmith says, he observed this in voyages to the East Indies, which afford the fairest trials of this kind. See Dr. Lind's Essay on the Means of Preserving the Health of Seamen, 2d edit. note to p. 5.

vide Ferguson, 1846.

the

the troops experienced at Coxheath in Summer 1778, for though the weather was very hot, never did any army enjoy a more uninterrupted state of good health than they during the whole time of the encampment; but heat joined to moisture, is observed to give rise to the most fatal disorders in the warm climates. /

S E C T. II.

In winter and in cold weather.

IN our northern climates the winters are cold, and the weather variable; sometimes it is cold and rainy, at other times thick and foggy; sometimes we have fair weather and sunshine, at other times frost and snow; and sometimes it happens that we have all these different sorts of weather in the same day. During this season, soldiers are subject to coughs, pleurifies, peripneumonies, rheumatisms, and other disorders of the inflammatory kind. And in very intense frost, they are liable to have their limbs benumbed with cold, and their extremities frost bit, as it is called.

*England
climate.*

*Chest
diseases.*

B 3

And

Bombay in October after the rains. The rains commence in June. — 1841. — Nile Siang.

6 OF THE MEANS OF PRESERVING

Scurvy. And where there is a want of fresh provisions, and they are obliged to live on salted meat, and cannot have greens, pot-herbs, roots, or other fresh vegetables, nor be properly supplied with beer, cyder, wine, or other generous fermented liquors, they, as well as sailors, are subject to the scurvy†; especially if they be encamped or quartered in low damp places, as we experienced at Bremen during the late war.

Hygiene. The best means of guarding against inflammatory disorders, and other mischiefs arising from cold, whether in camp or in quarters, is, to take care that the soldiers be well clothed; that they lie dry, and be well provided with straw and blankets, and with wood for fire; and to prevent, as much as possible, their exposing themselves to sudden changes from heat to cold,

In these northern climates, it would be right to allow every soldier on service a flannel waistcoat, a pair of worsted gloves, and a warm woollen stock, or a neckcloth, to

† Dr. Joh. Valint Willius, army physician to the king of Denmark, in his Treatise on Camp Diseases, says, you scarce find a camp in these northern countries in which the true scurvy, attended with stinking breath and eroded gums, is not to be observed. Cap. iii. sect. iii.

wear

wear when on duty in cold and wet weather, as soon as the winter begins to set in *. Sir John Pringle mentions the advantage the troops received from the flannel waistcoats supplied by the Quakers, in the winter campaign of 1745-6, in Britain; and those regiments who had them for their men towards the end of the campaigns in Germany, found that they contributed greatly to keep the men in health. And Dr. Meysery † thinks, that the half-boots, and the large cloaks with hoods, which the Austrian hussars always carry with them, are the principal

Flannels.

Austrians.

* A flannel waistcoat, worsted gloves, and woollen stock, or a neckcloth; may be purchased for about half a crown per man, and would contribute to preserve the lives of many; the recruiting of others, to supply whose places, if they die, will cost the government a great deal more than the price of the articles mentioned; which for a regiment of nine hundred men, at the rate of two shillings and sixpence per man, comes only to 112 l. 10 s. per ann. Every recruit sent from England to the army in Germany, cost the government at least twenty guineas before he joined his regiment; and every sick man sent to the general hospital, cost the government at least sixteen pence per day, which is ten pence above his pay; so that, if we suppose the extraordinary cloathing here mentioned would preserve only the lives of nine men to each regiment yearly, and keep forty in health who would otherwise be sick, we see what great gainers the government will be in point of money at the year's end; besides preserving the lives and health of so many men. /

† See La Médecine d'Armée, tom. i. Supplement, p. 443-4.

B 4

causes

/ See Ballin'salt, 1852.

8 OF THE MEANS OF PRESERVING

Hygiene. causes of the great health which these people enjoy in the time of service. Officers ought to take particular care that the men be well provided with good strong shoes and stockings; and where the troops remain late in the field, if the government allowed a pair or two extraordinary of each to every foot soldier, it would be of great use to the service. And in very severe winters, or in very cold climates, when troops have been obliged to keep the field, it has been found of the greatest service to provide the men with fur or flannel caps with wings, which can be brought down to cover the ears and neck, in very cold weather, and at night.

Both during this and in the late war the troops on the North American service have had a pair of trousers, or breeches with legs, which reach to their shoes furnished them, which has been found of great service in defending them against cold in winter, and against the bites of flies, insects, and of serpents, in summer.

Blankets ought to be provided for each tent, and those carried along with the regiment, so as to be always ready for the men when they come to their ground. During the late war, in Germany, a couple of
blankets

blankets were allowed for each tent of the British troops, and each company carried their blankets covered with an oil cloth on a horse; so that they were always up with the regiments when they came to their ground.

When the nature of the service will admit of it, officers ought always to be provided with field-beds, and ought to pitch them as well as their tents when they come to their ground, if they have time sufficient; and they ought to have an oil cloth to put above the straw in the bottom of their tents; and if they have a small carpet to lay above that, it will be so much the better.

Each regiment ought to be provided with a number of watch coats sufficient to serve the centinels who are to be on camp duty, or general guards, in very cold and wet weather. Some of the regiments in Germany had such coats, and found great service from them.

In winter, when the weather is very cold or wet, a glass of brandy, or of the spirituous tincture of the bark, given to the men as they went upon duty, especially in the night, has been found to be of great use*.

* Sir John Pringle has taken notice, that it would be a right measure to make an allowance of spirits to the infantry on service;

10 OF THE MEANS OF PRESERVING

Fires.
The times of standing centinel, and being upon out-posts, ought, if possible, to be shortened at such seasons; and fires in the rear of the camp, for men coming off duty to warm and dry themselves at, were found to be of great service.

Mindererus† recommends in unwholesome seasons to make fires of wood, and particularly of the juniper before the tents, and to burn wetted gunpowder to purify the air; and he observes, that the volleys of shot made mornings and evenings in a camp, conduce very much to the dispelling of mist and qualifying raw air.

Cold nights.
In spring, and the latter end of autumn, the days are sometimes extremely hot, and the nights cold and damp, and the men ex-

vice; which certainly would be of great use, and save many mens lives; and might be done at a small expence to the government, if properly managed; as it would only be requisite to make such an allowance when the troops are in the field, and to such men as mount guard in cold wet weather, or at nights in garrison towns, during the winter. If ever such an allowance be made, what spirits are given to the men ought to be mixed with five or six times the quantity of water; except when men are to stand centinels, or be upon out-posts, in a frosty season, or in cold wet weather; at which time a small glass of pure spirits may be given them in presence of the officer or serjeant of the guard.

† See his *Medicina Militaris*, chap. iv. English translation, page 23.

posed

posed to these sudden changes : at such times, the men who go upon duty in the night, ought to put on their flannel waistcoats, and be warmer cloathed than in the day ; and use many of the precautions practised in winter for the preservation of their health.

*night
duty.*

In Hungary, in the northern parts of Italy, and in many other countries of Europe, and in many places in warm climates, situated near to high mountains, which are covered with snow in winter, that does not all melt in summer, it often happens in spring and the latter end of autumn, that there are sudden changes from very hot to extreme cold ; and therefore soldiers in such places ought to be particularly cautious at such seasons, and be rather warmer cloathed than the climate should seem to require. /

In North America, when the men were in the field in very hard frosty weather, fires were lighted at the ends of the tents, and centinels set over them to prevent their doing mischief ; and both in Germany and North America, when the troops were in the field without tents, they cut down wood and made large fires, and the soldiers lay down and slept round these fires, with their feet next to them ;

Indic.

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them; and fires were lighted at all out-posts, where it could be done with safety.

To hut.
80 In Germany, when the weather set in rainy or cold towards the end of the campaigns, and the army was in a fixed position, his serene highness duke Ferdinand constantly ordered the army to hut; which was done either by thatching their tents, or building hurdles, or digging pits, and covering and thatching them over. The officers either built huts with fire-places in them, or had chimneys built to their tents.

67 Wherever there is plenty of materials, and the situation of the camp will admit of it, the thatching of the tents, or the building of huts above ground, is preferable to digging pits, or breaking the surface of the ground, to sink the bottom of the hut; for the vapours which arise from new turned up earth, are always unwholesome, and apt to occasion sickness among the troops; where the surface of the ground is broke, great care ought to be taken to cover the bottom of the hut or tent well with straw.

If, notwithstanding all precautions, men upon out-posts should be benumbed with cold, or frost-bit, they ought not to be brought

brought immediately near a fire, for that has been found attended with bad consequences, and occasioned gangrenes, or mortifications of the extremities, and even sometimes occasioned immediate death; but as soon as they are brought into camp or quarters, their extremities ought to be rubbed with snow, or put into cold water †; and afterwards well dried, and wrapt up in blankets; and warm mild liquors given them to drink, and afterwards cordials; and, after some time, they may be brought near the fire, or put to bed. Dr. Lind ‡ mentions one caution to be used when men are found in this condition; which is, not to give them immediately strong spirituous liquors, for that those

† Hildanus relates a very remarkable instance of the good effects of this treatment. A man was found quite stiff and frozen all over. He was put into cold water; and immediately the icy spicula were discharged from all parts of his body, so that he seemed covered with an icy crust. He was then put into a warm bed, and took a cordial draught, and a plentiful sweat followed; after which he recovered with the loss of the last joints of his fingers and toes. De Gangræna, cap. xiii. and even apples and other fruits, as well as the parts of the human body, which have been frozen, if brought immediately near a fire, turn soft and rot; but if put into cold water, throw out the icy spicula, and recover, so as to be almost as good as before they were frozen.

‡ Means of Preserving the Health of Seamen, 2d edition, page 19.

often

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often prove instantaneously fatal; but to put them to bed, and give warm water-gruel, or some other mild diluting liquor, to drink; after which, he says, a glass of spirits will prove less dangerous and more beneficial.

S E C T. III.

Of Winter Quarters.

*Over -
crowding.*
IN all countries, and in all climates, when an army goes into cantonments, or into winter quarters, particular regard ought to be paid to the quarters of the men; and care taken that they are not crowded too much; for too great a number of people living together, and breathing the same air, soon fouls it, and often gives rise to the most infectious distempers, as we daily see happen in crowded jails, ships, and hospitals; and therefore, when the cantonments or quarters are straitened, and necessity obliges commanders to make a great number of men be put into one town, or village, great care ought to be taken to make the soldiers keep their quarters as clean and airy, and their own persons as sweet and clean as possible.

baths.

If

If soldiers are to be lodged in barracks, *Barracks.*
 the quarter-masters who go before the regi-
 ments ought to examine them well; to have
 them cleaned out and well dried, and aired, *Hygiene.*
 the beds laid, and the barracks every way
 well fitted up before the troops arrive.—
 Every morning when the men are brought
 out to roll-calling, the beds ought to be
 made, the apartments cleaned out, the win-
 dows kept open for at least an hour, and
 every part of the barracks kept neat and
 clean, and free from all offensive smells.—
 And in the time of roll-calling in the even-
 ing, the apartments of the soldiers ought to
 be again swept out, and the windows kept
 open for half an hour.—If the barracks
 should happen to be small, or too close, *Holes*
 may be made in the doors or upper parts of *in*
 the windows. / When the soldiers lie upon *doors*
 straw, it ought to be turned daily, and *&*
 changed often; and they ought always to *win. Bld.*
 have a sufficient store of blankets for cover-
 ing them, and of coals, turf, or wood, for
 dressing their victuals, and for drying and
 airing their rooms, and keeping them of a
 moderate heat.—Care ought to be taken that
 the privies be not offensive, and orders ought
 to be given that no man ease himself near
 the barracks, but in the privies.

1 Mile Ballinacorney, 1852.

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d 7 In warm climates fewer men ought to be lodged in the same barracks than in the more northern latitudes, and the greatest care ought to be taken that they be always kept sweet and clean, and extremely well aired.

7 Towns and villages situated near to large woods, or in the neighbourhood of fens and morasses, or in the draughts of winds coming from them are often unhealthy, but more particularly so in warm climates; and therefore men ought not to be quartered in such places where it can be avoided. /

Private houses. If men are to be quartered in private houses, such ought to be chosen as are most dry and comfortable; and nearly the same care taken as when they are lodged in barracks; and the officers ought to see that the towns or villages in which they are quartered, be kept extremely clean; and if the houses have not proper privies, large pits ought to be dug in proper places, and these daily sprinkled with earth, and filled up as in camp. (houses)

Good. Orderly serjeants and corporals ought to be appointed for seeing the above regulations executed; and it ought to be the duty of an officer to visit the quarters daily.

1 Page 100, 1846.

In

In winter quarters, soldiers, if left to themselves, are apt to make the rooms in which they sit, and their guard-rooms, as hot as possible, especially in Germany, where the inhabitants use close stoves instead of open fires; and continue in these warm rooms till they are called out to be on duty, when, by being exposed to sudden cold, they are apt to be seized with inflammations of the breast; and therefore officers ought to examine carefully the quarters * and guard-rooms allotted for their men, and never allow the men to keep them as hot as ovens, by means of close stoves, or other such contrivances; but to depend more on good warm cloathing, and dry quarters, for guarding against diseases, than upon artificial heat. Many of the regiments in Germany made the people in whose houses their men were quartered, take down their stoves, and use only open fires; when there was no danger of the sol-

* Sir John Pringle has very justly observed, that upper stories are preferable to ground floors for quarters to the men; and that all uninhabited large damp houses ought to be rejected. Observat. on Diseases of the Army, part ii. chap. iii. sect. 2.

If necessity obliges officers to put up with damp or uninhabited houses for their men, care ought to be taken to clean them well, and to air and dry them by means of fires, before the soldiers go into them; and to supply well the men who are to lodge in them with straw and blankets, and with wood, turf, or coal.

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diers making their quarters too warm, as wood was difficult to be got.

But although close stoves are prejudicial in small rooms, yet when a town is much crowded, and men are obliged to be lodged, in winter, in large barns or churches, or other large open places, the German stoves may be used with great advantage in airing and drying such places, and keeping them of a moderate degree of heat; especially if there be a place in them for an open fire, or if they be of that kind which the Germans call *wynd stoves*, which have a door opening into the chamber where the people are lodged; or if there be broken windows, or any other opening by which a free circulation of air can be kept up in the men's apartments.

When men are quartered or cantoned in towns or villages, whose situation is low and damp, and where fresh meat and vegetables are scarce in winter, and the scurvy frequent among the lower class of people; commanding officers, at the approach of winter, ought to use their endeavours to provide a store of potatoes, onions, cabbages, four crout; of pickled cabbages, and other pickled vegetables; of apples and other fruits, preserved in different forms, to be laid up, and sold out to the men at a cheap rate during the winter.

They

They should contract, if possible, with butchers to furnish the men with fresh meat*, and endeavour to procure good small beer, or cyder or wine in the wine or cyder countries; or spirits to be mixed with water, to which may be added occasionally, a small proportion of cream of tartar or vinegar; or some other wholesome fermented liquor for their drink †; and to put their men into as dry comfortable quarters as possible.

Drink

S E C T. IV.

Of the proper seasons for troops, going on expeditions, to sail from Great Britain, and to land in different parts of the world.

IN times of war, when an army is to be sent into distant warm countries, the government ought to pay great regard to the time at which the expedition sails from Great Britain, and to contrive it so that the troops

* The regiments in Germany who kept their butchers in winter, and made stoppages of the men's pay, and obliged them to take a certain quantity of meat daily, were much more healthy than those who used no precaution of this kind.

† And loaves made of ground malt and rye meal baked in an oven, which the Russians call quafs-loaves, and use in their armies for making a small beer, by infusing them in warm water for twenty-four hours, may be prepared in quantity, as they will keep a considerable time, and given out to the men as wanted.

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d may arrive at the place of their destination in the most wholesome season of the year; and so long before the sickly season comes on, that the military operations may be over some time before it is expected.

In order to give some idea of the seasons most fit for landing troops in the West Indies, North America, the Mediterranean, and the coast of Africa, the East-Indies, and for passing into the South-seas, places which this nation is much interested in at present, I shall here mention some reports which were made relative to this subject, by gentlemen well acquainted with these parts of the world.

WEST INDIES. /

Seasons.

d *o* Jamaica. The best season for landing troops sent from Great Britain or Ireland, in Jamaica, is in November, December, January, and February, as the coolest and most free from rains; November is the best, as the most cool time before the heats come on.

d March, April, May and June, are very hot, and not proper on that account.

wanted. In places where the articles here mentioned are at too high a price for a soldier's pay, a small allowance, from the government, of such things, would contribute much to the preservation of the men's health in unwholesome garrisons.

1 *Wide Ballingall*, 1852. July

a July, August, September and October, are the worst seasons, as there is always much rain and heat in these months. The same may be said of the islands of Cuba, Hispaniola, and Porto Rico.

o N. B. The navigation is inconvenient in the four months which are best for landing.

Antigua, and the other leeward islands; troops ought always to sail from Europe so as to arrive in these islands between the latter end of November and the beginning of May, but never later in the summer, or hot months, as there is a great change from thenceforwards. From the latter end of November to the end of January, is, of all others, the most proper for their arrival; as that is the coolest season of the year, bears the nearest resemblance to the European climate, and is freest from all putrid diseases, which often rage so mortally among strangers.

Leeward islands.

NORTH AMERICA.

Pensacola. As troops destined for West Florida must go by the West Indies, the best time for their leaving England is about the middle of September, so that they may arrive in the West Indies about the beginning of November, when the climate is

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Y healthful ; and the old road of St. Christopher's is the best place for their rendezvous, because they may have at that place excellent water, and avoid those inconveniencies and delays which are incident to those who put into more considerable ports. By these means the troops may arrive upon the coast about the first of December, when the climate is nearly of the same temperature with that of England at the time they left it, and they will have an agreeable short winter before them, and next spring be seasoned to the approaching heat in the most gradual manner possible.

Mobile. The most proper time for landing troops here is the same as at Pensacola.—November, December, and January, are the most proper.—Then February and March.—April and May are to be avoided, if possible.—And June, July, August, September, and to the middle of October, are certain destruction to the troops. A regiment which landed in the first week of August 1765, without a single man sick, lost before March 1767, 200 men, 52 women, and 55 children.

St. Augustine. The seasons in East Florida are nearly the same as in West ; and the most proper time for landing troops is
No-

November; December, January, February, and March, will do, but the sooner they arrive after the beginning of November the better.

The proper seasons for landing troops in the provinces of Georgia, the two Carolinas, Virginia, and Maryland, are nearly the same as in East Florida; and the climate to the northward is so good, that it is near equal at what time they land.

THE MEDITERRANEAN. (1854)!

Gibraltar. From the middle of November to the end of March, is the most proper time for landing troops in this garrison, the soldiers then arriving at a time when the climate differs in nothing essential from the one they left. At this place, June, July, August and September, are constantly hot, the two last fultry; and in these months the garrison and inhabitants are subject to bilious and putrid disorders, but new comers seldom escape, and have them in a violent degree. — 2

In October and November are the autumnal rains; and fluxes and inflammatory complaints then take place. — December and January are commonly cold and dry; and the inflammatory complaints continue, but the

C 4

num-

1 Russian War.

2 *Cycle Pogussion, 1846. - Yellow fever.*

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number of sick decrease considerably.—February and March continue cold, and then the vernal rains fall, which are often intermixed with hail, and accompanied with high winds; and the disorders are much the same as in the preceding months.—April and May are temperate and pleasant, and the diseases of the four preceding months abate considerably in frequency and in violence.

Minorca. The climate is nearly the same as at Gibraltar, and it has been found by experience, that from the beginning of December till March is the most eligible time for the arrival of troops; November has been thought improper, as the rainy season generally commences then, and the sickness of the preceding months is not entirely gone.

COAST OF AFRICA.

Senegal. The best time for troops to come to this place is between December and March; the sickly season is from the beginning of July to the latter end of November.

CAPE OF GOOD HOPE AND INDIA.

Cape of Good Hope. The best time of ships sailing from England for the Cape is in January,

nuary, and they will arrive in March ; the time single ships take in making this voyage being commonly from ten to thirteen weeks.

Island of Madagascar. From the Cape of Good Hope to the Island of Madagascar is a voyage of three weeks, or less ; but the north-east winds prevent your going between Madagascar and Africa to India, until the end of April or beginning of May ; sometimes sooner, sometimes later, as that depends upon the shifting of the monsoon winds.

MAURITIUS AND ISLE DE BOURBON.

From the Cape of Good Hope to the Mauritius and Island of Bourbon, takes likewise three weeks ; and you may go any time after March until September, as the westerly winds prevail all that time in those seas ; but in the other six months the winds blow commonly from south-east to east.

B A T A V I A.

From England to Batavia is a passage between five and six months, and the best time to leave England is in the beginning of March.

B O M-

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BOMBAY.

✓ In going to Bombay, the best time to leave England is in April, or the beginning of May, and then you will come on the coast of Malabar in September or October,² when the weather is tolerably fine; but the months of May, June, and July, and sometimes August, are very tempestuous on that coast. /

MADRASS AND BENGAL.

✓ The time to leave England is from December to April, as the season on the Coromandel coast is generally fine from May to the beginning of October. If you come later on the coast than September, and are going to Bengal, you may meet with a tedious passage; but in May, June, July, and August, you sail in six or eight days from Madras to Balasore road, the place where ships take aboard pilots at the entrance of the Ganges.

CHINA.

✓ The passage to China is seldom under six months, and the best time to arrive is from June to September; after that time there are often very severe gales of wind and hurricanes in those seas, called by the Chinese typhoons.

1 South-west monsoon. — 1841. MA-

2 December & January. — See Ballin gale, 1852, p. 521.

MANILA

Is not above a week or ten days sail from China.

PHILIPPINE ISLANDS.

The season to go through the China seas to those islands is from the 15th of May till the 15th of September.

THE STREIGHTS OF MAGELLAN AND
LE MAIRE.

When ships are destined for the South-seas, they ought to make their passage through one or other of these Streights in the height of summer, that is, in the months of December and January; and they ought not to attempt the passing either of them, from the eastward, after the month of March. The voyage from England to these Streights commonly takes up three months.

Whenever troops are to be sent on service to foreign parts, which are not well known, the ministers in power ought to endeavour to find out, and to consult with people who have

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have lived in these countries, particularly physicians, if such can be found, with respect to the seasons of health and sickness, as well as to the strength of the enemy, and of their towns and fortresses.

S E C T V.

Of the embarkation of troops going on service.

10 **A**T all times, when troops are to be sent upon expeditions, particularly into warm climates, great care ought to be taken to embark such only as are in good health; particular regard ought to be paid to those who are picked up in the streets, or have been taken out of the Savoy, or other gaols. All dirty rags from off such people ought to be thrown away or burnt; and the men, after being well washed, and new cloathed, ought to be kept for a fortnight or *2* three weeks in some garrison town, or with their regiments in open airy places, that it may be ascertained that they have no infectious disorder before they be put aboard the transports.

or All ships allotted for transports ought to be well aired and purified, and every thing fitted

fitted up properly, before the men are embarked. They ought to be provided with ventilators, or wind-sails, to make a free circulation of air through the vessel * ; and they ought never to be crowded ; but full room allowed for each man, in proportion to the length of the voyage †. *Ships.*

In military expeditions, soldiers are put upon ship's allowance ; which, Dr. Lind very justly observes, ought not, in voyages to the warm climates, be made up so much of salted beef and salted pork, which have a tendency to putrefaction, as is the common practice of the navy ; but that a greater share of biscuit, flour, oatmeal, groats, rice, and

* See Dr. Lind's Treatise on the means of Preserving the Health of Seamen in the Royal Navy, where he takes notice of most of the articles here mentioned with regard to transport-ships in treating of ships of war.

† When ships are too much crowded with men, if they meet with a tedious passage, and hot moist close weather, they are often attacked with diseases which prove very fatal. Dr. Lind, talking of ships of war, says it is a mistake destructive to the men to crowd too many of them together in a southern voyage, or in a hot climate ; as the ship will be found, before the end of the voyage, in more distress for want of men, than she would have been, had she at first carried out only her proper complement. An additional number is made, in order to supply an expected mortality ; but they generally increase that mortality to double or triple their own number. Ibid. note to p. 48.

other

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Diet
07
other stores of that kind, ought to be laid in; and a greater proportion of them, and a less of the salted meat, distributed among the men: and he is certainly in the right, when he says, that a full animal diet, and tenacious malt liquors, are well adapted to the constitution of our own and of other northern climates; and that sailors who visit the Greenland seas, and are remarkable for a voracious appetite, and a strong digestion of hard salted meat, and the coarsest fare, when sent to the West Indies, soon become sensible of a decay of appetite, and find a full gross salted diet pernicious to health. “Instinct (he says) has taught the natives between the tropics to live chiefly on a vegetable diet, of grains, roots, and subacid fruits, with plenty of diluting liquors *”.

A store

do
• The following is the diet established for the seamen of his majesty's navy.

Every man is allowed a pound of biscuit, avordupoiz weight, and a gallon of beer, wine measure, per day.

On Sunday and Thursday, one pound of pork, and half a pint of pease, Winchester measure.

On Monday, Wednesday, and Friday, one pint of oatmeal, two ounces of butter, and four ounces of cheese.

On Tuesday and Saturday two pounds of beef.

5
It is left to the commanders of squadrons to shorten the aforesaid allowance of provisions according to the exigence of the service, taking care that the men be punctually paid for the

THE HEALTH OF SOLDIERS. 31

Y A store of vegetables, such as mustard-
feed, garlick, onions, potatoes, pickled cab-
bages

Vegetables

the same. As it is thought for the benefit of the service to alter some of the foregoing particulars of provisions in ships employed on foreign voyages, it is to be observed, that

Y A pint of wine, or half a pint of rum, arrack, or brandy,
hold proportion to a gallon of beer.

Spint

Four pounds of flour, or three pounds of the same with a pound of raisins, half a pound of currants, or half a pound of beef suet pickled, are equal to a four-pound piece of beef, or two-pound piece of pork with pease.

Half a pound of rice is equal to a pint of oatmeal.

Y A pint of olive oil is equal to a pound of butter, or two pounds of Cheshire cheese.

Of late sugar has been substituted in place of oil, and wheat in room of part of the oatmeal to ships going on long voyages.

Y And two-thirds of a pound of Cheshire cheese is equal to a pound of Suffolk.

Y If soldiers are sent as passengers on board of king's ships, or on board of transports, their allowance is generally but two-thirds of the above.

Y The diet established for the seamen of the Dutch ships of war, according to Dr. Roup and Dr. Monchy, is as follows:

Dutch Ships

Every morning, between seven and eight o'clock, they have boiled barley, mixed with a little butter and salt, with which the sailors commonly eat a piece of cheese; when they have eat one half of this mess, the other is mixed with beer while it lasts; and afterwards with some vinegar and water, which they love much.

Y On Monday, Tuesday, Wednesday, Friday, and Saturday, they have pease and stockfish for dinner and supper; to which is added, a little salt and butter; or a sauce made with vinegar, butter, and water.

On Sunday and Thursday, they have half a pound of bacon, with pease and hog's lard to dinner; and pease to supper, to which mustard is sometimes added.

Every

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Y bages and other pickled vegetables, four crout and other things of that kind, which can be purchased at a cheap rate, and preserved for some months, ought to be laid in; which may be mixed with the soups prepared for the men, or given them to eat along with their salted provisions.

Beer.
Cyder.
Wine.
Lemons.
O
Y A quantity of beer, cyder, or wine, ought to be put aboard, and a certain allowance distributed to each man daily. When, for want of these, men are reduced to an allowance of spirits, they ought to be mixed with seven or eight times the quantity of water, and occasionally some molasses, and a little lemon-juice may be added before they are given to the men; if lemons cannot be got, cream of tartar, or vinegar may supply their place; and it ought to be a duty of one of the military officers on board to see the spirits mixed with the water, and distributed among the men daily.

O- Every man has half a pound of butter, and a pound of cheese, as an allowance for the whole week. They have as much bread as they please, and they are not stinted in their allowance of beer and water, except in cases of absolute necessity. See Dr. Roup's Treatise De Morbis Navigantium, p. 8. —And Dr. Monchy's Essay on the Causes and Cure of the usual Diseases in Voyages to the West-Indies, Engl. Transf. ch. iii. p. 16.

It

It ought, however, to be observed, that altho' the juice of lemons and limes, and other vegetable acids, are good preservatives against the scurvy and putrid disorders, yet that the too free use of them is sometimes in danger of weakening the stomach and bowels too much, and rendering people subject to diarrhœas, or dysenteries, on the least feverish attack; and that therefore, when punch is allowed to the men, it ought not to be made too sour, and that it will be often better to give them but a pint, or quart of weak punch to dinner, and the rest of their allowance of spirits only mixed with water, than to give them the whole in punch.

On expeditions, a quantity of loaves, such as the Russians use for preparing a beer, may, probably, be found extremely useful on such services, and the beer to be a good preservative of health. The late Dr. Mounsey, who had been physician to the empress of Russia, told me, that they prepared them in the following manner. They grind a quantity of malt into flour, which they mix with oat or barley-meal, and make up into loaves, or cakes with water and then bake the loaves in an oven and keep them for use; and when they want beer they break them and infuse them in boiling

D water,

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water, along with some mint for twenty-four hours, longer or shorter time according to the heat of the weather ; at the end of which time, the liquor has acquired an acidulous vinous taste, and they use it by way of small beer ; and he added, that when he served as physician to the Russian army, it was used much, and that it was a wholesome and pleasant liquor, which the Russians call by the name of *quass*.

Quass.

It would be right when troops are destined to warm climates, to send some sloop of war, or other armed vessels, before the grand fleet, to take up a quantity of wine that will keep, either at Madeira, or other wine countries ; and afterwards to go to any of our settlements that are nearest the place of destination, and take in a quantity of limes, lemons, oranges, and other fruits, and vegetables which will keep for some little time ; and of spirits, live stock, and other provisions proper for the army ; and then to meet the fleet at the general rendezvous. When once a landing is made good, these vessels, after having unloaded their cargoes, may either be employed on other services, or be kept constantly going and coming for whatever stores or provisions are wanted for the army or fleet.

Madeira.

Fruits.

A sufficient quantity of vinegar ought to be put on board of each transport, both for the men to eat with their victuals, and likewise for fumigating and washing between decks occasionally. And a quantity of molasses, or coarse brown sugar, and of lemons, or their inspissated juice, ought to be allowed for making the punch, as well as for other purposes. Cream of tartar may sometimes be substituted in the place of lemons.

*Vinegar.**Sugar.**Potash.**Tartar.**Water.*

If the water become fetid, the quantity to be used in the day ought to be sweetened by means of the ventilator contrived by the ingenious Dr. Hales for that purpose. This ventilator is no more than a long tin tube, which opens into a tin box, about six inches wide and four high, with a number of holes at the top, fixed at one end; and this box is put down to the bottom of the water, and the nose of a pair of bellows fixed to the other end of the tube, which is above the water; by working the bellows, fresh air is driven through the whole body of water, the putrid effluvia are evaporated and dispersed, and the water becomes sweet in a very short time. — If there are no such ventilators aboard, the water may be greatly sweetened by turning it over frequently from one vessel to another.

Y other in the open air upon deck, and making it pass through a drainer, and afterwards allowing it to stand for some time in the open air, to allow the putrid particles to evaporate.—And it has been proposed, by Dr. Priestley, in order to keep the water sent aboard of ships fresh, to impregnate it with a quantity of fixed air disengaged from chalk, or alkaline salts, by means of oil of vitriol; but I have not heard of any trial being made with water so impregnated on board of ships for the common beverage of the people.

Water. Captain Cook, in his account of the means he used for preserving the health of his men during his voyage round the world, seems to look upon the care taken to procure them a supply of fresh water to be one of the principal causes of the great health they enjoyed during that long voyage; he says, “ I “ never failed to take in water wherever it “ was to be procured, even when we did not “ seem to want it; because I look upon fresh “ water from the shore to be much more “ wholesome than that which has been kept “ some time on board. Of this essential article we never were at an allowance, but “ had always abundance for every necessary “ purpose. I am convinced that with plenty “ of

“ of fresh water, and a constant attention to
 “ cleanliness, a ship’s company will seldom
 “ be much affected with the scurvy, though
 “ they should not be provided with any of
 “ the antiscorbutics before mentioned †.”

The men ought to be brought upon deck, and roll called two or three times a day ; they should be made to comb their hair, and wash their hands and face every day, and to shift themselves sometimes ; and in every respect to keep themselves as clean as the nature of the service will admit ; and proper exercises should be contrived, to keep them in health.

All the parts of the ship ought to be kept very neat and clean ; and the hold, and all between decks, ought to be scraped and swept daily ; and every morning, in fair weather, to be washed likewise, and afterwards sprinkled or washed with warm vinegar, while the men are upon deck ‡.

When the weather will permit, fires of dried wood may be lighted in iron kettles

† Philosoph. Transf. Vol. lxvi. for the year 1776. p. 405.

‡ This ought always to be done in the morning, that all the parts of the ship may have time to dry before the men go to rest in their births at night ; but it ought never to be done after sun-set.

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between decks, and centinels set over them, and the fires sprinkled with rosin or bits of rope dipt in tar, or with some cheap aromatic; and these fires may be carried into all the parts of the ship that safety will permit, in order to dry and purify the air †. After this operation all the ports and hatchways should be opened, and the air in all the parts of the ship often renewed by working the ventilators.

The mens hammocks and beds ought to be brought up upon deck in fair weather, and well aired, and afterwards put in their places, and fires lighted below decks.

In expeditions into countries, lying under the torrid zone, commanders ought never to allow the troops to land, till they come to the place of their destination, if they keep their health aboard the transports; neither ought they to allow the ships to run into harbours, or creeks, unless necessity absolutely requires it; for in these climates the parts near the sea shore are often marshy, or close and covered with wood, or have swampy beaches, which emit putrid vapours, and are

† It has been proposed, that the air in ships of war should be purified in this way both by Dr. Lind and by M. de Hamel de Monceau,

very unwholesome ; besides, experience has shewn that men commonly live more healthy in warm climates at sea, where the air is dry and serene, and the heat moderated by refreshing breezes, than when they arrive in harbours, or get within reach of the noxious vapours which arise from many parts of the land †. Hence sailors on expeditions are always more healthy than soldiers.

The late Dr. Hume, in mentioning the comparative health of the seamen and soldiers on the Carthagena expedition in the year 1740, observed to me, that great as the mortality was amongst the ships, and in the naval hospitals, it was far greater among the troops, as it is always in the West Indies. The difference was probably occasioned by the soldiers, from the nature of their duty, being more exposed to the sun ; and by their lying in camp on the shore, where the chilliness and damps dispersed through the air by the land winds, are always more sensibly felt than in the ships ; and hence it happens that seamen, who are sent to wood and water in uninhabited parts of the West Indies, where the lands are not

† Dr. Lind says, that it is constantly observed in unhealthy harbours, that the boat's crews employed in wooding and watering the ships, who are obliged to lie on shore, suffer most. Ibid p. 72.

cleared, and where for that reason the air is moister, are often ill, on their return to their ship, especially, if they have slept a night or more ashore; whilst not one of the greater number remaining aboard have any complaint. The troops too undergo a great change and deviation from their usual way of living; whereas the sailors sleep every night in their own beds, they eat the provisions they are used to, and it is dressed for them at regular stated hours. But to whatever causes the greater mortality among the troops may be ascribed, the difference was very great, as appeared by the return made to lord Cathcart on the day of the embarkation at Portsmouth, compared with the return given to general Wentworth, when the remains of that army were embarked at Jamaica to return to England. There may be other causes for the great difference between the numbers of seamen and of soldiers who die in the West Indies; but it is probable, that those I have assigned, are some of the most capital, if it is considered, that when ships are careening, they are always most sickly, and at such times, the nature of their duty is nearest to that of the troops; and like them the sailors have opportunities of
strag-

straggling about in the sun, of sleeping in the open air, and of getting greater quantities of liquor.

When necessity requires parties to be landed for wood or water, or on other duties, they should always, when the service will admit of it, be obliged to return and lie aboard at night ; and if that cannot be done, they should be cautioned to avoid lying down to sleep in the woods or other damp places, and on the grass, where the air is fresh, or they are exposed to the dews ; and they should be advised to pitch their tents on a rising ground, covered with straw or dried leaves, or reeds, and a blanket ; and to use the other precautions necessary for encamping in these warm climates ; for where this care has been neglected, the consequences have frequently proved fatal.

A very remarkable instance of the fatal effects of the neglect of these precautions we have related by Dr. Lind. In the year 1739, in Mahon harbour, a party of men were sent with the coopers from admiral Haddock's fleet to refit and fill the water-casks, who, finding an artificial cave dug out of a soft sandy stone, put their bedding into it ; every one who slept in this damp place was infected with the tertian fever, then epidemic in Minorca, and

and not one in eight recovered. At the same time the men aboard the ships continued healthy; and others, who were afterwards sent on the same duty, enjoyed perfect health by being obliged to sleep in their respective ships. He says, he has known a whole boat's crew seized next morning with bad fevers by sleeping near the mangroves, with which the sides of the rivers are frequently planted in the torrid zone.—And in his *Treatise on Diseases incidental to Europeans in warm Climates*, published in the year 1768, he gives several instances of seamen being attacked with fevers from being allowed to sleep on shore, while the crews of other ships lying in the same harbour remained healthy, by their officers taking particular care not to allow any of them to sleep at nights on shore.—Mr. Clark, in p. 58 of his *Observations on the Diseases in long Voyages to hot Climates*, and particularly on those which prevail in the East-Indies, published in 1773, tells us, that the land of North-Island, which lies near the beginning of the Streights of Sunda, appears at a distance finely variegated, but at the place where the wood and water is to be got is low, and covered with impenetrable mangroves, and infected with a variety of insects

—that

—that a Danish ship in the year 1768, anchored at the island, and sent twelve people on shore to fill water, where they only remained two nights, every one of them were seized with a fever, of which none of them recovered ; and although the ship went out to sea, and the sick were not removed from the rest of the people, none, except the twelve who slept on shore, were attacked with the complaint.

On unhealthful coasts, the noxious land vapours often affect the crews of ships that run up into rivers or harbours, and cause great sickness ; and therefore in such places ships should anchor at as great a distance from the shore as can well be done, that they may be exposed to the sea breezes, and as much to the windward of the woods and marshes as possible ; and if the anchorage is safe, one should prefer the open sea to running up into rivers or creeks †.

SECT.

† The higher that ships sail up the rivers upon the coast of Guinea, the more sickly they become : such, however, as keep at sea beyond the reach of the land breezes (that is, two or three leagues at sea), are for the most part healthy. Lind, *ibid.* p. 65. The malignity of these land vapours often does not extend itself to any considerable distance, as we know by manifold experience. The troops in Zealand were very unhealthy when admiral Mitchel's Squadron, which lay but a little way

S E C T. VI.

*Of the means of preserving the health of troops
on their arrival in warm climates.*

WHEN troops, sent on an expedition into warm climates, arrive at the place of their destination, particular care should be taken to guard them against the diseases peculiar to such climates, which are different from those common to our more northern latitudes.

People coming first from a cold into a hot climate are apt to have plethoric symptoms; a pain of the head, giddiness, a sense of weight, and fulness of the breast, and a slight inflammation of the tunica conjunctiva; and some are apt to be seized with ardent fevers and diarrhœas. And all practitioners have observed, that new-comers into warm climates are at first liable to fevers tending to the ardent, and are very subject to fevers

way from the shore, enjoyed perfect health.—Sir John Pringle's *Observat. on the Diseases of the Army*, p. 1. chap. vii.—In July and August 1744, two ships, belonging to admiral Long's squadron in the Mediterranean, lying near the mouth of the river Tyber, began to be affected with fevers, while others, though at a very small distance, but farther out at sea, had not a man sick. Lind, *ibid.* p. 66.

of

of the remitting and intermitting kind, which are the endemics of all warm countries at certain seasons of the year ; and after some time they are apt to fall into fluxes, the yellow fever, and other diseases depending on a putrescent state of the juices. In military expeditions these disorders are liable to be complicated with fevers of the malignant or hospital kind, if care is not taken to prevent it. And nothing has been found to be more productive of diseases in those warm climates, than indulging freely in the use of spirits and other strong fermented liquors ; or exposing one's self to the damps, especially lying on the ground after the dews fall ; and working hard, or using violent exercise in the heat of the day.

The best preservatives against diseases in warm climates have been found to be,

I. A healthful situation ; for nothing contributes more to the preservation of the health of Europeans, on their first arrival in warm climates, than living in such situations ; and therefore commanders ought to be particularly careful in chusing the most wholesome places for the encampment of troops, that the nature of the military operations will admit of.—The most healthy situations, in
warm

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warm climates, are those on the sides of hills, or mountains, where the soil is dry, and clear from woods and stagnating water ; and where there are no morasses within three miles.—

The unhealthy places are those which are low and swampy ; which are wet and not cleared of wood ; which are sometimes covered with water that dries in the hot season ; and which are frequently overflowed by the sea ; or where the shore is lined with stinking ooze, or mud ; and likewise such places as by their situation should seem to be healthy, but are within one or two miles of unwholesome marshes or swamps, and are exposed to the winds coming from them. /

2. Temperance both in eating and in drinking ; the diet ought to be of light and easy digestion, composed more of vegetable than of animal food ; such as a small portion of fresh meat, joined with a sufficient quantity of vegetables ; Rice, Indian corn, and other grains, and roots of various kinds, prepared in different forms ; well baked bread ; the moderate use of ripe fruits ; and the free use of mild cooling subacid liquors, joined with a small proportion of vinous or spirituous liquors ; carefully avoiding the too liberal

Payson, 1846.

beral use of wine, spirits, or other strong fermented liquors.

3. Great care not to expose one's self to the damps of the night, nor to lie down to sleep on the grass, or in woody moist places, in the day; and to avoid all violent exercise in the heat of the sun.

4. Such means as tend to support the spirits; for chearfulness has been observed to contribute as much to the preservation of health, as fear and dejection of spirits to the production of diseases.

5. Keeping the body clean, and bathing frequently in the sea, or in a river, early in the morning.

The late Dr. John Hume, one of the commissioners for the sick and wounded, who had considered with great care and attention the causes which are productive of diseases among the sailors of his majesty's navy, and of the means which are most like to preserve their health in warm climates, observed to me, that when a ship, which has been but a little time in the West Indies happens to careen, the bilious fever almost always breaks out amongst her crew with great severity, and sweeps away great numbers; and that the less time such ships have been in the country the more men they

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they lose ; for the mortality among the seamen happens principally in the first year after their arrival in the West Indies, often in the first two or three months ; for when a ship's company has had their seasoning as it is called, that is, after the bilious fever has been amongst them, it is well known that they are usually as healthy as in any part of Europe.—For this reason, line of battle ships should never be hove down, (i. e. careened) till they have been a year or more in the country, except in cases of great necessity ; and it would be well if the smaller ships and sloops were always cleared by other ships, or by a hulk, by which their crews would be kept from straggling, drinking, and sleeping in the open air in the night, and often in the sun in the day-time when they are drunk ; by such precautions many melancholy consequences to the men would be prevented.

In warm climates, officers ought to be particularly careful to keep their men sober and temperate ; to procure them good bread, and plenty of vegetables † and fresh meat,

† Every fort, barrack, or garrison, in our settlements in the warm climates, ought to have some acres of ground belonging to it, which should be cultivated by the soldiers, and planted entirely with such wholesome greens, roots, or other pot-

meat, if possible ; and where no other but salted meat can be got *, to make them boil a small proportion of it in their camp kettles, along with onions, groats, rice, carrots, turnips, greens, or any other wholesome roots or herbs which the country affords, or they can get, and of these to prepare a good wholesome soup for themselves ; and where there is plenty of the ripe acescent fruits, which are reckoned wholesome, to distribute a moderate quantity among the soldiers daily, which will

Vegetables

Fruit.

pot-herbs, as will grow in the climate ; and a certain quantity of them ought to be distributed among the men daily, or two or three times a week as the garden affords, for commonly the pay of a soldier is too small to buy these things which are so necessary for health in warm climates.

* In warm climates it is extremely difficult, if not impossible, to supply an army with fresh meat daily, nay, even to furnish good salted meat, if what is sent from home happens either to spoil or run short ; because, if a bullock or sheep is killed, the meat is often fly-blown before it is cold, or can be brought to camp. However, I am told, that meat may be preserved long in hot climates in the following manner. When bullocks, sheep, or hogs, can be had, let them be skinned, and cut up as fast as possible, and while the meat is yet quite hot, sprinkle it well over with a powder made of two parts of salt, and one of salt petre ; then lay it in the shade on sloping boards for twenty-four hours, with weights above it, that the juices may run off ; and then rub it well over with a powder composed of two parts of salt and one of the best brown sugar, and put it into barrels, when it will keep good for many months. This method is practised with great success in Italy, and in Jamaica and other parts of the West Indies.

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both help to preserve their health, and prevent them from privately stealing and eating large quantities, to the prejudice of their health.—And they ought to encourage their men, and keep up their spirits.

They should also prevent, as much as possible, the too free use of wine, spirits, or other strong fermented liquors; and in wine countries give every man a daily allowance of wine, to be mixed with water for his common drink; and in countries where nothing but spirits can be got, make the spirit be mixed with water, or made into a very weak but not too sour punch, before it is given to the men, as lemons, oranges, limes, and other fruits proper for this purpose, are generally to be had in most warm countries.

But it ought to be observed, that although the moderate use of acid liquors, and sub-acid fruits, contributes greatly to the preservation of health in the warm climates, yet, that the abuse, or too free use of them is apt to hurt the stomach, and to weaken the bowels too much, and to give rise to disorders of these organs.—Dr. Knox told me, that in the Guadaloupe expedition he observed, that those who indulged very freely in the use of very weak sour punch, from a
 notion

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 notion that acids were the best preservatives
 against the diseases of the West Indies, were
 more subject than other people to diarrhœas
 and dysenteries, when they were attacked
 with the least feverish complaint; and he
 observed likewise, that those who had oppor-
 tunities of drinking Madeira wine and claret,
 and used these liquors in moderation, were
 less liable to dysenteries and bilious fevers
 than others.

Dysentery.

Officers should be careful not to march
 their men in the heat of the day, nor order
 them upon duty where they must stand ex-
 posed to the dews and damps of the night,
 unless where the military operations abso-
 lutely require it.

Marching

They should endeavour to make the bot-
 tom of the tents be covered with straw, or
 dried plantain leaves, or leaves of trees, or
 dried reeds, and with blankets †, for the
 men to lie upon.

The time of standing sentinel, and being
 upon out-posts, if possible, should be short,

† A sufficient store of blankets has often been neglected to
 be carried out in expeditions into warm climates; but blankets
 are no where more necessary, as it is very prejudicial to the
 health of soldiers to be obliged to lie down on the bare ground;
 and straw, dried reeds, and other such things, are often diffi-
 cult to be got in these climates.

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where men are exposed to the scorching heat of the sun; and when men are upon out-posts in the night, it should be recommended to them to lie down on the ground as little as possible; and if they do it, to chuse a dry place; and, where it can be done, to have it covered with straw or a blanket, and to have some light covering to defend them from the dews.

The tents should be covered with boughs of trees, and the men should be ordered to strike them often in the middle of the day, and air well every thing within them.

Baths
The men should be obliged to keep themselves neat and clean; to comb their hair, and change their linen often; and if the camp be near the sea, or a large river, they ought to bathe themselves early in the morning, as often as the nature of the service will permit. However, the following caution ought to be observed, which is, not to go into the cold bath when overheated with work or liquor, or when the stomach is full, or when a critical eruption, called the prickly heat, appears on the skin*.

When

* Dr. Lind says, the use of the cold bath, either in tubs under the fore-castle, or to dip in the sea early in the morning, has been found extremely beneficial in warm weather and hot countries; and that he can affirm, from his own experience in
hot

When men are seized with inflammatory symptoms on entering into warm climates, they may be bled freely: afterwards they do not easily bear such copious evacuations, but rather require to have them made in smaller quantities, and very early and frequent, as inflammations make a rapid progress in warm countries. Dr. Lind says, many practitioners disapprove of blood-letting in the countries lying under the torrid zone, on a supposition that the blood is too much dissolved; but he thinks that this rule will admit of many exceptions; and that sailors (and consequently soldiers), being strong and robust, and exposed to greater vicissitudes of heat and cold, and more excesses, and other accidents in general, bear freer bleeding than any other set of people.

However, what is here said of bleeding is only to be understood as regarding people who are seized with acute inflammatory disorders, or remitting or intermitting fevers on

hot climates, that many diarrhœas and other complaints, the pure and sole effect of an unusual and great heat (relaxing the system of the solids, and occasioning a colliquation of the animal juices), have not only been cured by cold bathing; but their return, and even the attack of such diseases, effectually prevented by it. *Ibid.* p. 44, &c.

their first entering into warm climates ; and even in such cases the present circumstances of the patient, and the judgment of the physician, must determine the quantity of blood to be taken away ; and physicians ought to examine the sick carefully, that they may not mistake the bilious yellow fever, or black vomit, to which new-comers into hot climates are liable, for an acute inflammatory disorder ; because the yellow fever does not bear free bleeding, but must be treated in a manner peculiar to itself.¹—And it ought to be observed, that on the first attack of all feverish disorders in warm climates, nothing in general is of more service than to empty thoroughly the first passages, which are commonly loaded with putrid bile and other corrupted humours, which, if not discharged are absorbed, and give rise to very troublesome and very dangerous symptoms. In Grenada, and several other of the West India islands, they now, on the first attack of fever, or sickness at the stomach, take a vomit of two or three grains of emetic tartar, and afterwards a dose of salts, or of some other mild purge, and find that if it does not prevent the fever entirely, that it often renders the disorder mild, and soon brings about an

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1 Bullen's journal, 1852.

intermission in which the bark may be administered.

After some time, the diseases in these warm climates tend to the putrid kind, and must be treated as such.

SECTION VII.

Of the ground most fit for camps.

IN all countries, and in all climates, great care ought to be taken in chusing the ground on which men are to encamp. Dry high grounds, exposed to the winds, where there is a free current of air, and which lie at a distance from marshes, stagnating water, and large woods, and near where there is plenty of good water, are generally healthful in very different climates *. But places situated low, where, on digging two or three feet below the surface of the earth, you come to water †, and marshy grounds, and places

* Mr. du Hamel says, that the air of the island of St. Domingo is very fatal to Europeans; but it is observed that those people who inhabit the rising grounds are much less exposed to diseases than those who live in the vallies. Sur la Santé des Equipages, art. i. p. 16. /

† Ground may seem very dry and healthful, and yet be quite the contrary, as is the case in many places, where water is found at the depth of two or three feet from the surface.

E 4 sur-
Vide Ferguson, 1846. - contra.

surrounded with corrupted stagnating water,
 are almost always the contrary, and very un-
 healthy; as are often those grounds which
 are subject to be overflowed by large rivers,
 and low places covered with wood, where
 there is no free circulation of air. However,
 it ought to be observed, that it is not the
 neighbourhood of water alone which is pre-
 judicial, but the watery vapours which keep
 the air perpetually moist, and the exhalations
 of corrupt effluvia, which render such
 places unwholesome; for the neighbourhood
 of rivers, and of the sea, where the tide ebbs
 and flows freely, has no such effect, where
 the situation is dry and airy; and those very
 unhealthy marshy grounds often continue
 healthy in winter, when their waters are re-
 freshed with rains*, and little or no moist
 putrid exhalations rise from them; though,
 in summer and in autumn, when their waters
 begin to corrupt, and the exhalation is strong,
 they are always exposed to diseases; and it is
 for this reason that such places are always
 very unhealthy in warm climates.

* Mr. du Hamel remarks, that places which were formerly
 very subject to diseases have become healthful when the water
 which surrounded them was refreshed by opening a communi-
 cation with the sea. Ibid. art. i. p. 18.

Hence,

Hence, where the military operations will permit, commanders, if possible, ought to chuse a dry ground, whose situation is high, and which admits a free current of air, such as on the banks of rivers, where there is generally a stream of fresh air, and plenty of fresh water to supply the camp; taking care to avoid the neighbourhood of low marshy grounds, and corrupt stagnating waters, especially in summer, and in hot climates. And care ought likewise to be taken to avoid those grounds which are apt to be overflowed by sudden floods and torrents in mountainous countries, where the mountains are very high, and are covered with snow in winter. Dr. Mezeray † tells us, that in the year 1746, the Austrian army, which was encamped between Campo Marone and Genoa lost 500 men and 200 horses by a sudden flood of this kind, and that the whole army was very near being swept into the sea by it.

When necessity obliges commanders to take post, or encamp in a wet or marshy ground, they should endeavour to make it as dry as possible, by ordering trenches to be cut for drains across the field and round the

† See Dr. Mezeray *La Médecine d'Armée*. tom. i. p. 67 & 68,

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men's tents ; to see that the ground within the tents be well covered with straw ; to order the tents to be struck at mid-day, in dry warm weather, and the men to dry and air the straw, and change it frequently ; to have a proper supply of blankets for the men, and to take care that they be well cloathed, especially those who go upon duty in the nights ; and, in the northern climates, to have fires in proper places for warming the men and drying their cloaths, and for correcting the dampness of the air †.

Woods.
If a camp should be situated near to woods, great care ought to be taken not to permit the soldiers to straggle into them, especially towards the end of summer and beginning of autumn, for the air in such places is apt to be moist, and from want of a free circulation, tends to corruption ; and if men lie down in the shade to cool themselves, which

† The negroes on the coast of Guinea, and some of the Indians, both of whom sleep on the ground, have constantly a fire producing a little smoak burning in the huts where they sleep, which corrects the moisture of the night, and renders the damp of the earth less noxious ; and during the time of the very unwholsome fogs on the coast of Guinea, called harmatrans, which lay waste whole negroe towns, the smoak of wood, of pitched staves, and of such things, are found to be the best correctors of this thick air. See Dr. Lind's Means of preserving the Health of Seamen.

they

they are very apt to do, after being heated by labour or exercise, they are in the greatest danger of being attacked with low bilious, and remitting and intermitting fevers, in the same manner, though not, perhaps, in such a violent degree, as in the warm climates.

S E C T. VIII.

Of keeping the camp clean.

Cleanliness and neatness in the camp is another article that ought to be particularly regarded, as it contributes greatly to keep the troops in health †. Portius Ramazini, and most other authors who treat of camp diseases, attribute those of the putrid kind in a great measure to the stench and putrid effluvia arising from the excrements

Ramazini

† Dr. Mezeray tells us, that the physicians to the Austrian armies informed him, that their troops which served the campaigns in Hungary, and did not use the necessary precautions of health in that moist country, were very unhealthy; while the Turks, who are extremely sober, and live upon rice and a little mutton, and who are extremely careful in keeping their camps very clean, and in washing and bathing themselves often, and who are naturally accustomed to breathe an air warmer than their aliments, had very few sick in their army. See Book entitled, *La Médecine d'Armée*, vol. i. p. 5 and 6.

of

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of men and beasts, and from the dead bodies of men, horses, and other animals, lying unburied in the neighbourhood of camps, and have in a particular manner mentioned the necessity of burying such putrid substances.

The camp, and its environs, ought to be kept very neat and clean; the butcheries, if possible, to be at some little distance from the camp, and the butchers made to keep them extremely clean, and to bury all the offals and other things which may corrupt and foul the air;—and deep pits with seats above them ought to be dug for privies, and the excrements covered daily with earth till the pits are near full; and then they ought to be filled up with earth and new ones dug; and every man ought to be punished who eased himself any where in camp except in the privies. And by repeated experience it has been found that when a camp begins to turn unhealthy †, that often the only means capable of preserving the health of the

† Si autumnali, æstivoque tempore diutius in iisdem locis militum multitudo consistat, ex contagione aquarum, & odoribus ipsius fœditate vitiatis haustibus, & aere corrupto, perniciosissimus nascitur morbus, qui prohiberi non potest aliter, nisi frequenti mutatione castrorum. Veget. de Re Militari, lib. iii. cap. 2,

men, is to change the ground, and to leave behind all the filth and nastiness which gave rise to those putrid disorders, which seems to have been often practised by the ancients†, especially after great battles, when they perceived the soldiers to become sickly.

It was a common remark with us in Germany, that the troops kept their health much better when they moved about and shifted their ground often, than when they remained long in a fixed camp; a remarkable instance of which we had in the end of the year 1760, for the men who remained in the fixed camp about Warbourg were very unhealthy, while the regiments which were detached to the Lower Rhine, under the command of the hereditary prince of Brunswick, enjoyed a much better state of health; and notwithstanding their great fatigues, and the loss they sustained at the affair of Kampen, were much stronger when they rejoined the army in the beginning of February 1761, to go upon the winter expedition into the country of Hesse, than those regiments

† Quintius Curtius tells of Alexander the Great, after the battle of Arbela, following this method. — *Ingruentibus deinde morbis quos odor cadaverum totis jacentium campis vulgaverat, maturius castra movit.* Lib. v. 32.

which

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Hygiene. which had remained inactive in the fixed camp.

Moses. The divine lawgiver Moses has enjoined cleanliness in the camp to the Jews in a particular manner, when he says,

1104 "Thou shalt have a place also without
"the camp, whither thou shalt go forth
"abroad; and thou shalt have a paddle upon
"thy weapon, and it shall be when thou wilt
"ease thyself abroad thou shalt dig there-
"with, and shalt turn back and cover that
"which cometh from thee. For the Lord
"thy God walketh in the midst of thy
"camp; therefore shall thy camp be holy,
"that he see no unclean thing in thee, and
"turn away from thee." Deut. chap. xxiii.
ver. 12, 13, 14.

In fixed camps, the striking the tents at mid-day in fair weather, and turning and airing the straw, and changing it often, will contribute much to preserve the health of the men; and, as nastiness and filth are productive of the worst of diseases in armies, and cleanliness and neatness are among the best preservatives of health, the making the men wash themselves daily, and change their linen often, and keep themselves other-
wise

wife clean, ought never to be omitted by the officers.

And when the camp is near to the sea, or to a river, or a lake, it has been found of use, when the service would admit of it, to make the men bathe themselves two or three times a week, early in the morning, when they are quite cool, and not heated with work or labour, nor their stomachs overloaded with victuals †; but although bathing

ing
 † Dr. Mezerey observes, that the exposure to the weather, joined to a neglect of keeping the person clean, and of changing the linen after profuse sweats, or a copious perspiration, hardens the skin, and subjects soldiers to diseases, particularly to the itch, and to darts; which he says may often be prevented, or cured by changing the linen, and even by rubbing the body well with a coarse warm cloth immediately after sweating; and by bathing from time to time when the season will permit, some hours before or after meals, when the body is cool.—He recommends river water for that purpose, and he advises to avoid very cold water, which comes from snow melting on the tops of very high mountains. He approves of sea water, and the waters of natural warm baths, when an army happens to be near them. And where no such waters are near, he recommends to the soldiers to boil some bran, and marshmallows, and other herbs, and to rub and wash their bodies with cloths dipt in these warm decoctions. And he observes, that the rubbing and cleaning the skin in this manner preserves them from many diseases, both acute and chronic; and hastens their cure by softening the skin, and facilitating sweat and a free perspiration, and that nothing refreshes the body more after long marches, or hard labour of any kind. See his Treatise, entitled, *La Médecine d'Armée*, p. 35, &c. Art. XIII. No 1.

Cel.

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ing, at such times contributes to the preservation of health, yet soldiers ought to be cautious of plunging themselves into cold water, when over-heated with work or liquor, or after a very hearty meal in very warm weather, for this has often been productive of bad consequences, and brought on fevers and other disorders.

S E C T. IX.

Of supplying the camp with provisions, straw, wood, &c.

ALL military commanders ought to have straw for their men when they come to their ground, if possible; and to have the army well supplied with provisions; giving proper encouragement to the country

Celsus, Diemerbroek, and other authors, have forbid the use of the warm baths in the time of the plague, as supposing that they relax the fibres too much, and dispose the habit to putrid diseases; and the use of these baths has been allowed to be one of the causes which renders the Turks so subject to the plague; but some gentlemen who have been at Constantinople, and who have enquired into this matter, seem to think that this is a vulgar error; and rather believe, that if the Turks did not bathe themselves, that they would be more subject to this disorder than they are at present, from the little precaution they use in preserving themselves from infection, or in preventing this disorder from spreading.

people,

people, and to futtlers and merchants of all sorts, to bring in every kind of provisions and other necessaries to camp, and contracting with butchers and bakers for supplying the troops with meat and with bread; and preventing, as much as possible, the soldiers from moroding. And the commanders of every corps ought to take care that their men form themselves into messes, and that stoppages be made for buying them provisions.

In Germany, every soldier had a certain daily allowance of bread, and every regiment of the British troops contracted with a butcher, who was obliged to carry along with them, at all times, a certain number of live sheep and oxen, to kill when wanted, and to sell the meat at a fixed price. Every soldier was obliged to take a certain quantity, which was paid for by stoppages made in his pay; and this meat was boiled in the camp kettles, with such roots and greens as could be got; by which means the men, whenever they could use their kettles, had always a good warm soup, as well as meat, to refresh them after their fatigues, which, along with their ammunition bread, made a good wholesome food.

Dr. Mezerey * observed, that not only in Italy and in the country of Low Provence, but also in the cold mountains of the Alps, that the Spaniards had much fewer sick than the French who were encamped, or quartered near them, which he attributed in a great measure, to the great use which they made of onions and garlick, in dressing of their victuals, and which they eat likewise raw; for these roots, by warming the stomach, preserved them from worms and the diseases which they bring; and likewise from those disorders which proceed from crudities and cold; though other causes concurred, which were, 1. The great attention they paid to defending themselves both from too great a degree of cold and great heat. 2. The care their commanders took to moderate their labours and marches; and when it was very hot weather to march them at night and not in the day. 3. The sending the men immediately to the hospital as soon as they were taken ill, where they punctually obeyed the orders of the physicians.

In countries where fruit is plentiful, a certain quantity of what is fully ripe, distri-

* Mezerey, Medicine d'Armée, tom. i. Art. 43. p. 93, &c.

buted to the men in warm weather, and in hot climates, will contribute to preserve their health, though the abuse of it will prove prejudicial; but unripe and acrid fruits are always hurtful †. *Fruits.*

Water is another article which commanders endeavour to have their camp well supplied with, and therefore they generally encamp near rivers or rivulets. Where the stream is small, care ought to be taken that its course be not interrupted, and that no filth or nastiness, or any thing that will spoil or corrupt the water, be thrown into it.

When there are no rivers or rivulets near a camp, and the men are supplied from wells, if the water is not pure, very often the digging of deep pits, and covering the bottom and sides with large stones, and over these a lay of sand, gravel, or chalk, will make the water pure in a few hours.

† The British foldiers in Germany used sometimes to hurt their health by eating great quantities of raw unripe apples, plums, and other unripe fruits; but the foreign troops had a much better method of using such fruits: they commonly boiled or stewed them, and eat them with bread, or with their meat, which in a great measure corrected their bad qualities.

The orders in the French camp, prohibiting the men from eating unripe fruit, were strictly complied with every where in Germany during the late war.

In fixed camps, where the water is bad, Portius † proposes straining it through sand, and has given figures of machines to be used for that purpose; but the method proposed by Dr. Lind is still more simple, which is, to get a broad cask with one end struck out; then to put a longer cask, with both ends struck out, in the middle of it; fill the short cask one third with sand, and the inner longer cask above one-half; fill the rest of the inner cask with the water, which will filter through the sand, and rise above the sand in the outer cask, where it may be allowed to run off into vessels placed to receive it, by means of a cock, put into the side of the outer cask, fifteen or twenty inches above the level of the sand.

Similar contrivances may be used for purifying water in small quantities; thus, a piece of flannel, or of any other woollen cloth, or of sponge, or some cotton may be put into the bottom of a wooden, or tin funnel, or of a large horn, and above this three or four inches of sand or gravel; and after it is put

† See the Treatise published by Dr. Luc. Anton. Portius, in 1686, de Militis in castris sanitate tuenda, part ii. cap. vi. In this book we have many useful things mentioned relative to the health of soldiers.

into a proper place, with a vessel below it, may be filled up with water, and let remain till the water has passed into the vessel set below to receive it.

Where there is no such conveniencies for purifying the water, what is used for drink ought to be mixed with a small proportion of spirits, or wine, or with vinegar, or cream of tartar, when neither of the other two can be got; and if the water be previously boiled, it will be so much the better.

In expeditions into warm countries, where fresh water is difficult to be had, a few stills, with a proper apparatus, ought to be carried out; and after a landing is made, the stills ought to be set to work for distilling fresh water from sea water, in the manner mentioned by Dr. Lind*; and although a sufficient quantity cannot be distilled for serving the whole army, yet enough may be got in this way for the use of the sick.

* Dr. Lind relates a number of experiments of his having distilled sea water in different manners, as recommended by others; and concludes, that the best way of getting fresh water from salt, is to distil the sea water by itself, without any mixture; and he proposes having a still head to the coppers or iron pots in which the meat is dressed aboard a ship. Ibid. note to p. 84, &c. /

S E C T. X.

On the means to be used in marches, when on out posts, standing centinel, and on first going into winter quarters.

WHEN men are very warm, after long marches, and other hard duties, in summer; officers should endeavour to prevent their swallowing immediately great quantities of cold water, and persuade them to wait a little till they cool; and at such times, if spirits can be got easily, to order a small quantity to be mixed with the water in each man's canteen.

We have a very remarkable instance related by Quintus Curtius*, of the bad effects which followed the swallowing greedily large quantities of cold water, when very hot; when the army of Alexander the Great came to the river Oxus, after marching through the country of the Sogdians, where there was a scarcity of water, many of them

* Sed qui intemperantius hauserant intercluso spiritu extincti sunt, multoque major horum numerus fuit, quam ullo amiserat proelio. Vide Quint. Curt. Ruffi, lib. vii. sect. xix. edit. Paris, 1720,

drank immoderately of the water, and a greater number of men died than had been killed in any battle.

Though the abuse of vinous and spirituous liquors is very destructive to the constitution, yet these same liquors, given in moderation to soldiers on service, during the times of great fatigues, are some of the best preservatives of health. Spirits, for common use, ought to be mixed with water; and in the hot climates made into punch; though in very cold and wet weather, and in damp nights, a glass of pure spirits, given to the men going on duty, is of great service; for it is always observed, that men are much less apt to catch diseases from being wet when they are upon a march, or at hard work, than when they stand centinels, or are upon out-posts where they move but little, or when they lie down in their wet cloaths; and they are less liable to be affected by the weather after a hearty meal, or drinking a glass of spirits, or some generous liquor, than when their stomachs are empty.

In out or advanced posts, and in countries and places where wine or spirits are not to be got in sufficient quantity, infusions of ginger-root, or of other hot aromatic sub-

Wines

stances may be used to supply their place.— During the late war, the rangers, belonging to the army in North America, who were always in motion in the woods, where it was impossible to be supplied at all times with wine or spirits, used to carry some ginger-root in their pockets; some of which they scraped into water and drank with their victuals, or when they were fatigued or heated with labour; and they found that it refreshed them, and recruited their spirits, equally as well almost as wine or spirits, without heating or intoxicating them.—A gentleman who was some time with these rangers told me, that he soon became reconciled to the taste, and was very sensible of the good effects it produced; and that those who had been long on this duty said, that they could not have undergone the fatigue without the use of this substance. And the negroes in the West Indies, who are not allowed the use of spirits or wine, use infusions of ginger to supply their place.

An infusion of bark or other bitters, and of garlick, in spirits, has been found to encrease their efficacy as preservatives both against the effects of cold and malignant distempers. Dr. Lind has recommended an infusion

fusion of garlick in spirits as one of the best
 stomachics and diaphoretics he knows in cold
 wet weather. And many have recommend-
 ed a tincture of the bark ‡: towards the end
 of the year 1743, Mr. Tough, one of the
 apothecaries to the British military hospital
 in the late war, then a mate to a marching
 regiment, was ordered to go down the Rhine
 from Germany to Flanders, with a party of
 sick, who had the seeds of the hospital fe-
 ver among them, and were to go in bilanders.
 Having had a cask or two of brandy put
 aboard as part of the stores for the sick, he
 was afraid lest the men should make too free
 with the spirits; to prevent which he threw
 in a quantity of bark into each cask, and
 gave the men regularly, morning and even-
 ing, a glass of this bitter tincture. At the
 same time, the men were kept extremely
 clean. By these means most of the sick

Garlick.

Bark.

‡ During the campaign in Hungary, in the year 1717,
 Count Boneval preserved both himself and family from dis-
 orders, by taking himself, and making all his domestics take,
 two or three times a day, a small quantity of brandy, in which
 bark had been infused, at a time when all the rest of the army
 were infected with malignant disorders. A regiment in Italy
 continued healthy by the use of the bark, when the rest of the
 Austrian army, who did not pursue the same method, were
 greatly annoyed with sickness. See Kramer, quoted by Dr.
 Lind.

mended

mended upon the passage, and they had no return of the malignant fever amongst them; whereas sir John Pringle, who takes notice of the other parties who came from the same hospitals in Germany, tells us, that the malignant fever broke out in a violent degree, and half the number died by the way, and several others soon after their arrival †.

Commanding officers ought always to endeavour to proportion the time the men are to be upon duty to the weather and the nature of the climate. The time of standing centinel in very hard frost, and in cold wet weather, or in the heat of the day in summer, when the weather is very warm, and in hot climates, ought to be shorter than when the weather is dry and more temperate.

The marches of troops ought, if possible, during the time of very hot weather, to be made either very early in the morning, or in the evening, or at night; and officers, during the course of an active campaign ought to spare their men as much as possible.

After long fatiguing marches, or hard labour, especially in hot weather, if men be much heated, officers ought not to allow

† Observat. part I. chap. iii.

See Walker's Original.

them to expose themselves to sudden cold, nor to throw off their cloaths and lie down on the grass, nor to swallow immediately large quantities of cold water, but to make them cool themselves by degrees, and content themselves with a small quantity of liquor till they are cool, which, as we before observed, will be the better at such times, if it be mixed with wine or a little brandy.

In Germany we found that nothing was so refreshing after great fatigue as soup, broth, tea,² or some other warm mild liquor, with bread; and therefore after long marches, or hard labour, such ought always to be prepared for the men, where the materials for making them can be had, and the circumstances of the troops will admit of their being prepared.

And when the troops are in quarters, and have nothing to do, the officers should narrowly inspect into their manner of living; and have them out daily, when the weather will permit, and exercise them, or march them two or three English miles a-day, in order to prevent their falling sick for want of exercise; for soldiers left to themselves are very subject to diseases when they come into quar-

Quarters.

¹ Men training in the Victoria-park in May, 1853. - Earl of Wilton.

² Leichardt in Australia.

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Oy
(Chatham)
 ters after an active campaign, by leading too indolent a life, if officers do not take care to prevent it. However, at such times, the exercise ought to be moderate, and the men should not be brought out in wet weather. The Romans, for these reasons exercised their men daily * in the Campus Martius when it was fair weather, and under cover when it rained or snowed.

* Veget. de Re Militari, lib. iii. cap. 1. sect. 2.

(C. D. 460.)

PART

PART II.

OF

MILITARY HOSPITALS.

INTRODUCTION.

WHenever men are seized with distempers, they ought immediately to be separated from those in health, and either sent to the regimental * or general hospital.

There is no part of the service that requires more to be regarded than the choice of proper places for hospitals, and the right management of them, on which the health and strength of an army often depends; for in wet unwholesome seasons, if infectious disorders get into the hospitals, which possibly

o * Some of the regimental surgeons in Germany, when they took the field, had always some spare tents carried along with their medicine chests; and when any of their men fell sick in camp, and they could get no house for a regimental hospital in villages, they ordered these tents to be pitched, and had the ground within well covered with straw and blankets, and then put the sick into them, and there took care of them till they found an opportunity of sending them to the flying hospital.

might

might have been prevented by proper care, they often weaken an army in a very short time far more than the sword of the enemy.

S E C T. I.

Of the means used by the ancients to prevent diseases in their armies, and of the manner in which they took care of the sick and wounded soldiers.

Roman Hygiene. **T**HE Romans were very attentive in the preservation of the health of their soldiers in the time of service; for we learn from Vegetius *, that they took great care that they should be well supplied with good water and provisions, and fire-wood, and their horses with forage; and that a sufficient quantity of wine, vinegar, and salt, should always be provided for their camps.—And that they endeavoured to keep their armies in good health, by due attention.—1. To situation. —2. To the water.—3. To the season.—4. To medicine.—5. And to exercise.

1. To situation; in not encamping near to unwholesome marshes, or on dry uncovered ground in summer; or without tents,

* See Fl. Veget. Renal. de Re Militari, lib. iii. cap. 2, & 3.

or remain too long on the same ground in summer or in autumn.

2. To the water; by taking care that the army did not use bad or unwholesome water of marshes, for bad water was very productive of diseases.

3. To the seasons; by not beginning the marches of the army too late in summer, and exposing the men to the scorching heat of the sun; but setting out so soon as to get to the end of the day's march by day-break. —And in winter, by not marching the men in the night in the time of frost and snow; and taking particular care that the men never were in want of fire-wood, or of cloathing.

4. To medicine; by the officers seeing that the sick had their regular meals, and were well looked after by the physicians.

5. To exercise; by keeping the troops during the day time in constant exercise; in dry weather in the open air; and in the time of rain or snow, under cover; for exercise *Exercise* did a great deal more for the preservation of health than the art of physick.

And from many passages in the Greek and Roman authors it appears, that the ancients, as well as the moderns, were very attentive

both in India. in

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in taking care of the sick and wounded soldiers in their armies.

Ancients. Homer *, Xenophon †, Quintus Curtius ‡, and

Homer.

* Homer mentions Podalirius and Machaon, sons of Æsculapius, as two excellent physicians in the Grecian army, vide Iliad, book II. Formerly the same people acted both as surgeons and physicians; hence we find the word physician used indifferently for both.

Xenophon.

† There are several passages in Xenophon's Cyropaideia, which shew that the ancients in their military expeditions had always physicians and surgeons attending their camps, to take care of the sick and wounded.

In the first book, Xenophon introduces a discourse between Cambyfes and Cyrus, on the art of war; and he makes Cyrus to tell his father, that he had taken care to provide the ablest physicians and surgeons to attend him on his expedition to take care of the health of his troops.

In the third book, sect. 2. he observes, that after the defeat of the Chaldeans, Cyrus made his people untie the prisoners, and committed the care of the wounded to his surgeons.

In the fifth book, sect. 6. after giving an account of the defeat of the Cadusians by the king of Assyria, in a sally from the city of Babylon, he tells us, that Cyrus went himself round with his domestics and surgeons to visit the wounded, and to see that they were taken proper care of.

And in the eighth book, sect. 1. he mentions, that Cyrus after he had got possession of Babylon, laid up stores of all sorts of medicines, and conversed with the most celebrated physicians about surgical instruments and remedies, so that nothing might be wanting in case of sickness.

‡ We learn from Quintus Curtius, that physicians constantly attended the camp of Alexander the Great; for when Alexander was seized in a violent manner with a cramp, from jumping into the river Cydnus when he was very hot, he was immediately taken care of by his physicians, and was cured by Philip. Vide lib. iii. sect. 11. And when he was wounded

in

and Vegetius *, mention that physicians and surgeons constantly attended the Grecian, Persian, and Roman armies when they took the field.—Quintius Curtius †, that in the time of action, the wounded were carried off the field to be taken care of.—Hygenus Gromaticus ‡, that the sick and wounded

in the assault of the town of Oxydraca, his physicians were immediately sent for, and Crytobolus dilated his wound and extracted the dart. Vide lib. ix. sect. 18.

* Fl. Vegetius, in his treatise De Re Militari, mentions, physicians attending the Roman armies, both in book II. ch. ix. and in book III. ch. ii.

† Quintus Curtius, in his account of the first battle of Alexander the Great with Darius, mentions, that the wounded could not be carried off the field as usual; the enemy pressed so before, and his own people behind.—“Nec vulnerati (ut alias solent) acie poterant excedere, cum hostis instaret a fronte, a tergo sui urgerent.” Vide lib. iii. cap. 25.

‡ Hyginus Gromaticus, who is supposed to have been a servant of Augustus, and to have been made a freeman, and to have wrote in the reign of Trajan his treatise De Castrametatione, has, in that work, given a description of a Roman camp, in which he mentions a place in it which was set apart for the reception of the sick, which was from thence called the Valetudinarium. His words are, “Quoties autem quinque vel sex legiones acceptæ fuerint, duæ cohortes primæ lateribus tendere debebunt; duæ in pretenturâ, supra quas valetudinarium; deinde Vexillarii vel cohors secunda, & si res exigat, cohors peditata, quingenaria, loco Vexillarum solet super poni; & si strictior fuerit pedatura, cohorti legionariæ dari debet, sed numero suo, ut septuaginta pedes valetudinarium, & reliqua quæ supra tendunt accipiant, hoc est veterinarium & fabrica, quæ ideo longius posita est ut

soldiers were laid in tents, pitched in a place of the camp appropriated for that purpose, called from thence the Valetudinarium, of which Schellius * has given a figure in the plan of a Roman camp published after Hyginus's description. And Livy †, Tacitus ‡, and Jus-

“ valetudinarium quietum esse convalescentibus possit; quorum pedatura in singulas species ad ducentos homines solet computari.” Vide Hygeni Grammatici Lib. de Castramentatione.

* In Joan. Grævii Antiquitat. Roman. tom. x. p. 1280, there is a plan of a Roman camp done after Hygenus's description, by Schellius.

† In the early times of the Roman republic, it appears to have been the custom after great battles for the nobility to have opened their houses for the reception of the wounded soldiers; for Titus Livius informs us, that after the victory obtained over the Veii and Etrusci, Fabius the general distributed the wounded among the nobility (the patricians); many were given to the family of the Fabii, nor were they any where taken better care of.—“ Neque immemor ejus quod initio consulatus imbiberat, conciliandi animos plebis, faucios milites curandos dividit patribus; Fabiis plurimi dati, nec alibi majore curâ habiti.” Vide lib. ii. cap. 47.

‡ Tacitus, after giving an account of 50,000 people being killed by the falling of an amphitheatre at Fidenæ, during the time of a shew of gladiators, mentions that the houses of the nobility were opened for the wounded, as used to be the custom in ancient times after great battles.—“ Ceterum post recentem cladem patuere procerum domus, fomenta & medicæ passim præbiti; fuit urbs per illos dies, quanquam mæstâ facie, veterum institutis similis, qui magna post prælia saucios largitione & cura sustentabant.” Vide lib. iv. Annal. sect. 63.

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tin* inform us, that after great battles near to large cities, the wounded Romans and Greeks were received into the houses of the nobility, had physicians to attend them, and were furnished with fomentations and other proper remedies. And Cæsar †, that when an army moved, the sick and wounded were sent off in waggons to towns, to be taken care of.

And though no ancient author, either historian or physician, that I have met with, makes mention of the particular manner in which their military hospitals were conducted,

* Justin mentions that the same practice prevailed among the Spartans after their defeat at Sellasia:—"Patentibus omnes domibus faucios excipiebant, vulnera curabant, lapsos reficiebant." Vid. Justinii Histor. lib. xxviii. cap. 4.

† The Roman generals seem to have sent their sick and wounded men into towns, in the same manner as is done by those of the present time. For we read in Cæsar's Commentaries of this method having been practised on more occasions than one.—In the 62d chapter of the third book De Bello Civili, we have the following passage: "Itaque nulla interpositâ morâ fauciorum modo & agrorum habita ratione, impedimenta omnia silentio prima nocte ex castris Apolloniam præmisi, ac conquiescere ante iter confectum vetuit; his una legio missa præsidio est."—And immediately after in chapter 65, he says, "Itaque præmissis nunciis ad Cn. Domitium Cæsar scripsit, & quid fieri vellet ostendit; præsidioque Apolloniæ cohortibus iv. Lissi i. tres Orici relictis, quique erant ex vulneribus ægri depositis, per Epirum atque Arcadianam iter facere cœpit."

ed, nor how the sick and wounded were treated in them, yet it should seem that they were well taken care of; for Vegetius informs us, that it was the duty of the (*Præfectus Castrorum*) the quarter-master general, an officer of high rank in the Roman army to look after them, to superintend the conduct of the physicians and surgeons, and to provide every thing that was wanted for the sick.—And from some passages in Livy †, Tacitus ‡, and other authors §, it appears to

And in the 20th chapter De Bello Africano, we read, “*La- bienus faucios suos, quorum numerus maximus fuit, jubet in plaustris deligatos Adrumetum deportari.*”

† It was a common custom among the Roman generals, in order to gain the affections of the soldiers, to go round among the wounded, to enquire if they were well taken care of, and to give them every assistance in their power, as appears by many passages of the classic authors.—Livy, in talking of Papirius Cursor says, “*Itaque adhibitis legatis ipse (nempe L. Papi- rius Cursor) circum faucios milites, inferens in tentoria ca- put, singulos ut sese haberet rogicans, curam eorum nomi- natim legatis, tribunisque & præfectis demandabat; rem per se popularem ita dexter egit, ut medendis corporibus animi multo prius militum imperatori reconciliarentur; nec quic- quam ad salubritatem efficacius fuerit, quam quod grato animo ea cura accepta sit.*” Vide Titi Liv. Histor. lib. viii.

‡ Tacitus after informing us that Germanicus, after the army had suffered much, assisted the soldiers with money, tells us, that he went round the wounded soldiers; “*utque cladis memoriam etiam comitate leniret, circumire faucios facta singulorum extollere, vulnera intuens, alium spe alium glo- riâ,*

to have been a practice among commanding officers of armies, who wished to gain popularity, to go round among the sick and wounded soldiers, and to enquire of every man how he did, and if he was well taken care of.

From all which it should appear, that not only great attention was paid to prevent diseases, and keep the armies in health, but that great care was taken of the sick and wounded soldiers; and that the methods followed for these purposes were, in many respects, similar to those practised at this day.

“riâ, cunctos alloquio & curâ, fibique & prælio firmabat.”
Vide C. Corn. Taciti Annal. lib. i. sect. 75.

§ Pliny, in his panegyric on Trajan, mentions his following this same practice of visiting the sick. “Non tibi mores
“tua inire tentoria, nisi commilitonum ante lustrasses; nec
“requiem corpori, nisi post omnis dare.” Vide Plinii lldi.
Panegyri. Trajano dictum, cap. 13.

We have already mentioned from Xenophon, lib. v. sect. 6. that Cyrus went round to visit the wounded soldiers after the defeat of the Cadusians.—And Lampridius reports of Alexander Severus, that after a battle he went round to visit the wounded soldiers in their tents, and made those, who wanted it, be transported to towns, and had every thing furnished them that was necessary.

S E C T. II.

Of the hospitals wanted in time of actual service.

IN the British service every regiment has a surgeon, and a mate belonging to it, who take care of those men who fall sick, or are hurt. In times of peace, they go with the regiment whenever it marches from one place to another; and in quarters they provide an hospital for the sick, take care of them in it, and provide medicines, and every thing wanted, having an allowance made them for that purpose.

In times of war, when the regiment is ordered on actual service, the surgeon and his mate always go with it; and their duty is—In winter quarters to take care of the sick and hurt in their own regimental hospital, in the same manner as in times of peace.—In spring, or summer, when the regiment takes the field, they encamp with it, and have commonly some tents pitched in the rear of the regiment for the reception of such as may fall sick, or be wounded, till an opportunity offers of sending those who are ill of fevers, fluxes, or other dangerous disorders.

disorders, or who have received bad wounds, or are any how rendered unfit to do duty with the regiment, to the nearest general hospital.

—In the day of battle, they are commonly placed somewhere, in the rear of their own regiment, that is judged most safe, to dress those who may happen to be wounded, to take care of them, and to place them properly; and to perform themselves, or assist the hospital surgeons in performing such operations as are necessary to be done in the field. And after the battle to take care of the wounded, and when an opportunity offers, to send such as can be moved to the flying hospital, which is commonly at some little distance in the rear of the army; or to the nearest hospital that may be fitted up for their reception.

When an army is in the field in face of an enemy, they are often obliged to make quick, and sometimes very long marches, which renders it impossible for the regiments to carry their sick and wounded with them; and as on such occasions their surgeons and mates are obliged to go with the regiments, to be near at hand in case of an action, it is necessary to have proper hospitals in the rear of

the army for the reception of the sick and wounded from camp.

The hospitals commonly wanted for a large army acting on the continent; are

Hospitals 1. One in the rear, to follow their motions, so as to be always ready to receive the sick from camp, which is called the moveable or flying hospital. 2. One or more, at some distance, in towns, to receive such of the sick as can be moved from the flying hospital, when they are obliged to go from one place to another; or when a greater number of sick is sent to them than they can easily take care of*.

Each of the hospitals ought to be provided with physicians, surgeons, mates, purveyors, or commissaries, and others, to attend and take care of the sick.

Besides the physical people who attend the hospital, one or two physicians ought to go along with the army to attend the commander in chief, and the general and staff

* When parties of sick or wounded are to be sent from camp, or from one hospital to another, care ought to be taken that they are placed properly in the waggons; that they have proper physical people, nurses, &c. to attend them; as well as provisions, and other necessaries, so as to be in no danger of wanting any thing while they are on their journey.

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officers, in case of sickness; and an apothecary, provided with a small chest of medicines, ought to attend at head quarters to make up the prescriptions of the physicians.

A number of hospital surgeons also, with mates, ought to attend the army, to be ready in case of an action. These ought to be attached to the suite of the commanders of the different corps or brigades, and to be quartered or encamped with them. And each surgeon should be provided with a waggon or some horses loaded with a proper chirurgical apparatus, as instruments, bandages, lint, and other things necessary for taking care of the wounded.

A small quantity of medicines, some wine, rice, portable soup, &c. and utensils for a small hospital, and two, three, or four hundred sets of bedding should be carried about with the army, in case of an action, for the use of the wounded, till they have time to receive assistance from the flying hospital. Some sets of surgeon's instruments, bandages, lint, and other dressing for recent wounds, and bedding ought to be carried on horseback, so as to be at hand when any of the surgeons are sent with detachments that are going upon an attack.

To

To prevent crowding the general hospitals in winter quarters, every regiment commonly takes care of their own sick, and has proper hospitals fitted up for them.

S E C T I I I.

Of the places and situations most proper for hospitals.

IN the time of service the commander in chief generally orders the hospitals to be established in towns or villages that least interfere with the military operations, to which the sick and wounded can most easily be conveyed; and which he can best protect from the insults of the enemy †.

In towns, the places fittest for hospitals are public buildings, which have large, dry, airy apartments, situated on a high ground, where there is a free draught of air, and a command of water.

† It would be a right measure, in the beginning of every war, to settle by a cartel that military hospitals on both sides should be considered as sanctuaries for the sick, and mutually protected; as was agreed upon between the late earl of Stair, who commanded the British troops, and the duke de Noailles, who commanded the French in the campaign in Germany in the year 1743. See Dr. Pringle's Preface,

In winter, those houses which have open fire-places in the rooms, are always preferable to such as have close stoves, or no fire-places at all; for an open fire-place serves to keep up a free circulation of air in a room, as well as to keep it warm. And for the same reason, where nothing but stoves can be got to warm the wards, the wynd-stoves, which open into the room or ward, are vastly preferable to the close ones.

Fire-places.

Where there are no public buildings, private houses answering nearest to the above description are most proper for hospitals. In general, houses with small rooms make but bad hospitals; and very damp and close places ought by all means to be avoided.

In summer, when the moveable or flying hospital is ordered into villages, large barns, and the largest airy houses, are the best.

Barns.

Churches, situated on a dry high ground, made good summer hospitals; and in winter, when necessity obliged us sometimes to use them in Germany for this purpose, they were found to answer very well, when we had bedsteads or cradles for the men to lie upon, and the wynd-stoves to keep them of a moderate heat.

Churches.

In warm climates, particular care ought to be taken to chuse proper places for erecting hospitals. The situation ought not only to be dry and airy, but likewise at a distance from large woods and marshes, and out of the draught of winds which come over such grounds, otherwise the hospitals will often be unhealthy; a remarkable instance of which the late Dr. John Hume told me that he saw at Jamaica, in the year 1741, while he had the care of the naval hospital there. The hospital in the beginning of the war was at the town of Port-Royal, situated on a sandy bay, exposed to the wholesome sea breezes, and at a distance from woodlands and morasses; and the patients in it were very seldom attacked with remitting or intermitting complaints.—In the course of the war the sick became numerous, and the government ordered a new, large commodious hospital to be built, about four miles from the town, on a dry spot of ground, clear of woods, and which rose, by a gradual ascent, for about a quarter of a mile from the sea; but unfortunately, it was full in the draught of a land-wind, which came over a large extensive marsh, on the banks of a fresh water

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ter river, at about the distance of two miles. This circumstance rendered the hospital so unhealthy, that not one man in a hundred, who remained three or four weeks in it, escaped remitting or intermitting fevers, and even the marine guard, who were relieved once in the fortnight, or three weeks, fared no better. The effect of this land-wind was very remarkable, for it occasioned such a cold and chilliness, when it began to blow in the morning, that it awaked the sick, and occasioned such a sensation, as if cold water had been thrown on them, and they often caught themselves drawing the bed cloaths over them; though in the fore part of the night they commonly lay without any covering at all.

That this land-wind, impregnated with the moist putrid exhalations from the marshes, was the cause of these fevers, was evident, from all the plantations which stood in its draught being unhealthy, while those situated out of it, though but at a very small distance, were extremely healthy, and the sick recovered when they were sent to them. On Mr. Hume's representation of the state of this hospital it was deserted, and another built at Port Royal.

Another

See Ferguson, 1846.

Another instance of the same kind was related to me in July 1771, by J. Graham, esq. who has an estate in the island of Grenada.—Soon after the British troops took possession of the island at the end of the late war, a party of soldiers was sent to lodge in some houses of a Monsr. Rochard's plantation, which was situated on a dry rising ground, and on the windward side of the island, and therefore believed to be a very healthy situation. All the men of this party died, which was attributed to their having marched twenty-two miles in one day, in order to reach this place.—A second, and a third party was successively sent to take up the same quarters; and, in order to avoid what was imagined to have been the cause of the fever which had been so fatal to the former party, they were ordered to make three days march of the twenty-two miles, but they all shared the same fate. These repeated misfortunes made the commanding officer search for other causes, when it was discovered that there was a marshy swampy ground lay between the plantation where the soldiers were quartered, and the sea, and that the moist putrid exhalations from thence, carried by the sea-breezes to the quarters of
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the men, had been the cause of all the sickness and mortality which had been amongst them. The discovery of this circumstance prevented any more of the military being sent to this place.

In making choice of houses for hospitals, particular regard ought to be had to the privies or necessaries ; because, where their smell is offensive, there is always danger of infectious disorders. If, therefore, there be no proper conveniencies of this kind about an hospital, such ought to be contrived so as to prevent any danger from their putrid effluvia. If there be a river near the hospital, the necessaries may be made above it at a place where there is a rapid stream below. In villages deep pits may be dug in the ground behind the hospital, and seats made over them, as in camp ; and a thick lay of earth be thrown above the fæces every morning, till the pits are near full, and then they must be filled up, and others dug to supply their place.

*Bennett's
College.*

S E C T. IV.

Of the fitting up the hospitals and placing the sick.

W H E N once the places are fixed upon for hospitals, every ward ought to be made perfectly sweet and clean ; first, by scraping and washing with soap and water, and afterwards with warm vinegar ; and then they ought to be fumigated with the smoke of wetted gunpowder and of aromatics, and afterwards well dried and aired by lighting fires, and opening the windows, before any sick are admitted.

After this the beds ought to be laid ; in doing of which great care should be taken not to crowd the wards too much, as nothing corrupts the air so much, or so soon brings on infectious disorders. The beds ought to be laid so thin, that a person unacquainted with the danger of bad air, might imagine there was room for double or triple the number. In high lofty apartments, and in churches, and other large places, the beds may be laid much closer together than in rooms with low cielings. In churches, or such

*No.
of
beds.*

such places, thirty-six square feet, or a square of six feet by six, may be allowed for each man; but in common wards we must allow from forty-two square feet, i. e. six by seven feet, to sixty-four square feet, or eight by eight, according to the height of the ceiling, the airyness of the place, and the nature of the diseases of the patients.

The bedding most fit for hospitals, is palliasses and bolsters filled with straw; and in warm climates with dry plantain leaves, sheets, and blankets, as they can easily be washed. Feather-beds and mattrasses are apt to retain infection, and cannot be easily cleansed. In the fixed hospitals, bedsteads or cradles may be set up for laying the bedding on: but in the moveable or flying hospital the bedding must be, for the most part, laid on the floor.

When once the beds are laid, and the sick arrive, some of the gentlemen belonging to the physical department ought to attend, to distribute the sick properly through the hospitals.

All the surgery patients, such as have wounds, ulcers, sores, the venereal disease, &c. should be separated from the rest, and put either into particular wards by themselves, or into an hospital fitted up for

Quarantines.

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that purpose under the direction of the surgeons.

Those labouring under infectious fevers and fluxes, should each of them be placed in good airy wards by themselves, where the beds are laid much thinner than in the other wards of the hospital. If the flux wards have a privy near them, where the men can ease themselves, without being offensive either to their own ward, or any other part of the hospital, they are so much the fitter for such patients. In the hospital I attended at Bremen, the flux ward had a necessary that opened into the river Weser, and at Natzungen a deep pit was dug in the field about twenty yards from the barn where the flux men lay, which kept these wards always sweet.

Itch.
Patients that have got the itch, or any other infectious distemper, ought likewise to be put into separate wards by themselves; and at all times a place should be set apart for those who may be taken ill of the measles or small pox. A house separated from the other hospitals, with a distinct set of nurses and other attendants, bids fairest to prevent the infection from spreading.

Varicella.

S E C T. V.

Of the means to be used to prevent infectious disorders from being generated or spreading in an hospital.

WHEN once the sick are properly ranged, the next care must be to prevent infectious and malignant disorders from being generated, and from spreading amongst the sick; which is principally to be effected by keeping the sick and the hospital extremely clean and well-aired, and the wards as sweet, and free from putrid and offensive smells, as possible.

Every sick man, as soon as he arrives at an hospital, should be washed with warm water, or if there is a warm bath, or bathing-tub, he may be put into it; and afterwards be supplied with a clean shirt*, well-aired, before he be put to bed; and his own dirty linen should be immediately carried to the wash-house: and every morning each nurse

Linen.

* Every military hospital ought to have a number of shirts belonging to it, for the use of the sick who arrive without having clean linen with them. As soon as their own shirts are washed and dried, or that new ones are provided by their regiments, the hospital shirts ought to be taken from them.

Washing.
7 ought to carry a bucket full of warm water, and a piece of soap and a towel, round to each of her patients, and make them wash their hands and face, and their feet, when dirty.

Every morning all the wards ought to be scraped and swept, and afterwards sprinkled with warm vinegar; and when dirty, they ought to be washed after the fires are lighted.

Utensils.
Every thing in the wards, and about the sick, should be kept as clean as possible; the chamber-pots and close-stools ought to be carried away as soon as used, and immediately emptied and washed before they be brought back.

Windows.
The windows of the wards ought to be kept open to admit fresh air morning and evening, for a longer or shorter time, according as the weather will permit.

If the wards are close, and the cieling too low, we may remove some part of them, and open the garret story to the tiles. It has been sometimes found that one or two square holes (of about six, or eight, or ten inches diameter), cut in the cieling, and a tube made of wood fitted to it, and carried up into the chimney of the ward above, so as to enter above the grate, will answer for procuring

curing a free circulation of air; as the foul air, which is lightest, and occupies the highest part of the ward, finds a free exit by these tubes, as has been experienced in several of the wards in St. George's hospital. At other times a hole cut above the door of the ward, or in the upper part of the windows, and one of what are called the chamber ventilators fixed in it, will answer, where holes cannot be conveniently cut in the ceiling; and if the opening of the windows is not sufficient to air the wards, ventilators of different kinds, such as those mentioned by Dr. Hales, may be used, especially when the weather is hot.

In winter, fires should be lighted in all the wards where it can be done.

In foreign countries, when we meet with hospitals where there are no places for open fires, but only close stoves, different contrivances may be used to renew the air. Ventilators of different kinds may be used, or openings made in the doors and windows. In winter 1761-62, some of the wards in the hospital at Bremen, which I attended, had such stoves. In order to keep up a free circulation of air in those wards, I directed large holes to be cut in the lower part of the door

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See Mullingall, 1852.

in each ward, and two grooves to be made on the outside of the door, above and below the hole, parallel to each other, in which a board slid ; by means of which, the hole could be either quite covered or only in part, or left entirely open ; and I directed a casement, about eight or nine inches square, to be made in the upper corner of each window. After the fires were lighted, upon removing the board which covered the hole in the door, and opening the little square windows, a current of fresh cool air rushed into the ward by the door, while the heated foul air found an exit by the windows. In very cold weather, the opening of the small windows was sufficient ; but in mild weather, and in summer, it was necessary to keep both open.

The wards should be daily fumigated by means of thus, benzoin, or other aromatics, or wetted gunpowder thrown on burning coals, put in an iron pot or chaffern, or with the steams of warm vinegar placed in the middle of the ward. Dr. Lind says, that although cleanliness and a pure air contribute much to prevent infectious disorders, or to check them, yet that they of themselves are not always sufficient ; but that he seldom or

never

never knew a proper application of fire and smoke to be unsuccessful in producing the happy consequence of effectually purifying all tainted places, materials, and substances.

He tells us, that the ships of war in his majesty's service are purified by fire and smoke, and gives the process by which it is done; and he says, that he never heard of any ship, which, after being carefully and properly smoked, did not immediately become healthy for the men*. And he observes, that these steams and smoke, which are inoffensive to the lungs, besides correcting the bad quality of the air, produce another good effect; which is, to make both the patients and nurses desirous of opening the doors and windows for the admission of fresh air†.

In all military hospitals, at least in the fixed ones, one ward ought to be always kept empty; and whenever a malignant fever, or any other infectious disorder, breaks out in any

* See his first paper on Fevers and Infections.

† Ibid. p. 51. — The smoke of the juniper, or of its roots and berries, has long been esteemed an efficacious remedy against distempers. And Mindererus, in his Medicina Militaris, advises to burn fires of juniper before the tents, when the Hungarian disorder, the spotted fever, or other pestilential disorders are frequent in an army.

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ward,

! See Ferguson, 1846. - Heat is the thing.

ward, the men ought to be removed into this empty one; and the foul ward purified, by washing and cleaning it well with soap and water, and then with warm vinegar; and afterwards purifying it with smoke, in the same manner as is practised in his majesty's ships of war; and fires should be lighted daily, and the windows kept open for some time, before any sick be again admitted into it.

As soon as any patient dies, the body ought to be removed to the dead house; and the bedding he lay upon should be carried away immediately, and not used again till it has been smoked, well-aired, and washed.

All the linen of patients in fevers, fluxes, and other infectious disorders, ought to be changed often; and all the foul linen and foul bedding of the hospital should be smoked with the fumes of brimstone, or of wetted gunpowder, in a place set apart for that purpose; and Dr. Lind advises to steep them first in cold water, or cold soap lees, before putting them in warm water; as it is dangerous for any person to receive the steam that may at first arise, where this precaution is not used.

All

All the cloaths of soldiers who die in hospitals, ought to be sent to the smoke-house, and be well fumigated, and afterwards aired, before they are put up in the store-house.

Smoke-house.

S E C T. VI.

Of the diet of military hospitals.

THE next thing to be considered about a military hospital is the diet of the patients, which should consist of good wholesome provisions, that can be purchased easily, and at a cheap rate *.

Diet.

Good bread † is a standing article of provisions for an hospital in all countries and in all climates; and a certain quantity of it ought to be distributed to each man daily.

Paris.

* The French, and many other nations, give their patients meat soups in acute diseases, and after capital operations; and they allow them but little bread or other preparations of vegetable substances: but these meat soups without bread do not nourish the patient sufficiently, and tend too much to the putrescent; and this is one reason why more sick die in the French than in the British hospitals.

† On expeditions where a siege is expected, a quantity of flour ought to be carried out, and a number of portable ovens for baking bread for the sick, which may be put up after the troops have made good their landing.

! Strange.

The

106 OF MILITARY HOSPITALS.

Gruel.
The breakfast and supper in most military hospitals must be made of water-gruel, or rice gruel; as either rice or oatmeal can be got in most places, and are very portable.— Water-gruel is in general preferable to the rice-gruel, because most patients nauseate the rice-gruel, after eating it for some days, but not the water-gruel; as every person, who has attended the military hospitals, must have experienced. Where both rice and oatmeal can be had, rice-gruel may be used two or three times a week by way of variety.

Rice.
But although rice-gruel is not so proper for constant use, yet rice should always make an article among the stores for an hospital, as it is useful for making rice-water for drink; and it can be boiled or ground, and made into a light pudding, and in short may be used in a variety of forms to make a good and wholesome food for the sick.

Oatmeal.
Oatmeal is cheaper than rice, and can be procured almost every where in Europe, where armies make campaigns; as oats make such a great article in the forage for horses. And a sufficient quantity can at any time be ground into meal for the use of the sick, at the mills which are employed for making flour for the bakery, if there be none nearer the hospital.

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In countries where neither oatmeal nor rice can be had, Indian or some other corn, which is known to be wholesome, and which the country affords, may be employed in their place.

When fresh meat can be got, the men who are on full diet, and the nurses and other servants about the hospital, should have meat for dinner; and the meat that is boiled for them, along with the barley or rice that has been used for making drink, ought to make broth for the sick who are kept on a low or middle diet; and a small quantity of carrots, turnips, or other vegetables, boiled along with them, will make it more agreeable to the taste.

On expeditions where nothing but salted meat can be had, a quantity of portable soup* should always be carried out for the use of the sick; which with water and some barley, and fresh vegetables, when they can be got, will make a good soup or broth. The best way of preparing this soup or broth, is to boil some barley or rice along with some greens, or carrots and turnips, or a small

* Portable soup is nothing but a broth of meat made so strong that it turns to a jelly when it is cold, which is afterwards dried and put up for use.

proportion of onions, in a sufficient quantity of water, and when they have boiled enough, to take the pot off the fire, and dissolve the quantity of solid portable soup you intend to use; for this makes the broth much more palatable than when the portable soup is put in at first, and boiled along with the other materials, for it then gives a harsh disagreeable glew-like taste and smell to the broth; Dr. Hume told me, that he found such a sensible difference in the manner of preparing the broth, that when it was done in the last way the men took it with reluctance, but when prepared in the first way they were very fond of it.

Dr. Lind, in his Appendix to his second edition of his Essay on the Diseases incidental to Europeans in hot Climates, has very justly proposed, that salep, as well as portable soup, should be carried out as an article of provisions aboard of men of war; and it will certainly make a very useful article among hospital stores on expedition service; for it affords more wholesome nourishment in less bulk than rice, barley, wheat, oatmeal, or any of the substances commonly used.—The doctor observes, that an ounce of each of these articles, salep and portable soup,

soup, dissolved in two quarts of boiling water, will convert it into a thick jelly, which will be sustenance for one man a day; and the addition of spices will not only make this jelly more grateful to the palate, but also greatly improve the nutrimental quality; and salt, wine, or vinegar, may be added, if judged proper. Dr. Lind observes, that salep has another advantage over most other articles of provision, that it requires a much less consumption of fuel to prepare it for food; nay, it will form a paste with cold water, and it is not even too salt when mixed with sea-water; when mixed with cold fresh water, it requires ten times its weight of water to form it into a paste or cake; but when mixed with cold sea-water, it should not be allowed above six times its own weight of the water.

In whatever way the soup is prepared on such occasions, the dinner ought to consist of soup and bread, or of light puddings made of flour or of rice, of boiled rice or barley, or of panada, &c.

Nurses and recovered men may be allowed salted meat twice or thrice a week.

The common drink of military hospitals ought to be rice and barley-water, with a small

Drink.

small proportion of spirits and sugar. Small beer is a good drink where it can be easily procured; as is wine and water, or a very small negus, or very weak punch in warm climates.

Malt.

On expeditions, a quantity of malt should be carried out, which may either be made into sweet wort, or into small beer, as the physicians may think proper, when the troops come to the place of their destination; and if the troops should be long at sea, part of it may be made into wort, and given them as a beverage aboard; it having been discovered to be among the best antiscorbutics known.

Wort.

And a quantity of the loaves made of ground malt and rye-meal, or oat-meal, from which the Russians prepare the liquor, or kind of small beer called *quass*, of which I already made mention, may be carried out for the use of the sick in hospitals.

Punch.

In order that the sick may never be in danger of wanting water for drink and other uses, on expeditions to warm climates, or other places where there may be a scarcity of water, it will always be right to send among the hospital stores some stills, or still-heads, fitted to the coppers for dressing the victuals in; for in case of necessity, by help
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of them a sufficient quantity of fresh water may be got from sea-water, to supply the wants of the sick in hospitals. And, indeed, it would be right to have still-heads made for all the coppers of transport-vessels, as well as of men of war, in order to supply the troops in case of necessity; for in the year 1762, at the siege of the Havannah, many men died for want of good water, whose lives might have been saved, if the ships had brought from England such still-heads with them as are here mentioned.

Dr. Lind, physician to the naval hospital at Portsmouth, in the year 1761, first discovered this method of getting a pure good fresh water from sea-water alone, and pointed out the method of making it useful to the navy and shipping in general; and in the year 1762, published an account of his discovery, in the second edition of his Essay on the Means of preserving the Health of Seamen, p. 84, &c. and yet what is surprising, ten years afterwards a Dr. Irwin got 5000 l. from parliament as author of that discovery, without any notice being taken of Dr. Lind, or its seeming to have been known that he had been the inventor of this useful discovery. |

1761.

See Arnott, 1833.

Besides

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Extra.
 Besides this diet, extraordinary indulgences may be occasionally allowed to particular patients, as wine, brandy, sugar, milk. And the physicians and surgeons ought to have a discretionary power to order a vegetable or any other proper diet for patients in the scurvy, or any other particular complaints.

The established diet of a Military Hospital may be,

	Breakfast.	Dinner.	Supper.
1. Full diet,	One pint of water or rice-gruel. Water-gruel made with 3 or 4 ounces of oatmeal, a little common salt, and with or without a little sweet oil, and two spoonfuls of wine. Rice-gruel made with two ounces of rice, one spoonful of fine flour, a little common salt and sugar.	One pound of boiled fresh meat,	As breakfast.
2. Middle diet,	Ditto.	One pint of broth, half a pound of boiled meat.	Ditto.
3. Low diet,	Ditto, or according to the patient's appetite.	One pint of broth, or half a pint of panada, with two spoonfuls of wine, and a quarter of an ounce of sugar.	Ditto.

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The daily allowance of bread to be one pound to each man.—On expeditions biscuit must often be used in place of loaf-bread, especially at sea, and on first landing, before ovens can be erected for a bakery.

The common drink for those on full and middle diet to be rice or barley-water, with two spoonfuls of brandy to each pint, and a quarter of an ounce of lump sugar; small beer, or very weak punch; or wine and water, two ounces of wine to a pint of water, and a quarter of an ounce of sugar. The quantity not to exceed three pints per day.

Those on low diet to have rice or barley-water as above, with or without wine or brandy.

The diet boards hung up in the hospitals may be made with the following columns, nearly as they were with us in Germany.

Regiments.	Mens Names.	Diet.			Wine $\frac{1}{2}$ Pints.	Brandy Ounces.	Milk. $\frac{1}{2}$ Pints	Sugar. Ounces.
		F.	M.	L.				

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When such diet boards are kept in an hospital, and the men's names and regiments are once wrote down, the patients may with very little trouble be put upon the full, middle, or low diet, with so much of the above mentioned extraordinaries as may be judged proper.

If any thing else be wanted for the sick, the physician ought to give a particular order in writing for it, the columns here marked being only for such things as are most frequently wanted.

It should be a general rule in all military hospitals, that, when a party of sick arrives, every man may have immediately a mess of water-gruel given him, and afterwards be put on low diet till it is ordered otherwise by the physician or surgeon who attends him.

It is not to be supposed that the diet here mentioned can be strictly kept to in all parts of the world; for it must often be varied according to the difference of the climates, and to the provision of the countries where the scene of war may be.

S E C T. VII.

Of moveable or flying hospitals, and hospitals on expedition service.

WHenever a moveable or flying hospital is to attend an army, a quantity of bedding, and of all utensils fit for forming an hospital, ought to be put up in the waggons, together with provisions of different kinds, such as oat-meal, rice, sago, brandy, wine, sugar, &c. A butcher with a stock of live cattle, and a baker with a proper quantity of flour for making bread, ought constantly to attend; and a number of empty waggons should likewise be always in readiness, to transport the sick when the hospital moves, or when a party is to be sent to the fixed hospitals.

When troops go upon an expedition, besides the common hospital-ships, another ship ought to be properly fitted up for the reception of sick officers †; and every hospital-

Officers

† If there be no ship fitted up for the reception of sick officers, those who are taken ill on expeditions must be in a most miserable situation; as there is no place to receive them in the common hospital ships, they must remain almost without assistance in a crowded cabin amongst people in health; as was the case in some of our expeditions during the late war.

ship ought to be supplied with all sorts of provisions, and other necessaries fit for forming an hospital, before they leave England.—

Y The several boxes in which the medicines, surgeon's instruments, bandages, rice, and other necessaries for the hospital are packed, ought all to be numbered and marked; and exact lists taken of the contents of each, and *Inventories* it ought to be particularly noted into what ship they are put, and afterwards into what waggon, or store, after they are landed; and copies of the invoice thus made out ought to be given to the principal physicians, surgeons, and apothecaries of the army, and to the purveyors of the hospital, that they may know what stores there are, and where at all times they may be found when wanted. For want of this precaution it happened several times during the late war, that our armies in different parts of the world, were in great want of many things which they were carrying about with them in large quantities as useless lumber.

One or more armed vessels loaded with provisions, wine, and all sorts of necessaries for the sick, ought to attend them; or if the expedition be intended for the warm climates, these vessels ought to go before the fleet to
take

take up wine and fruits, such as lemons, oranges, &c. vegetables of different kinds, and a live stock for the use of the sick.

All hospitals attending expeditions should carry out among their stores a number of large tents for lodging the sick and wounded, immediately on making good their landing. And as in many places, particularly in warm climates, neither straw, nor a sufficient quantity of dried plantain or other leaves can be got easily for filling palliasses and bolsters for the beds, a number of hair or woollen mattresses and bolsters ought to be carried out, for laying the sick upon; and if a number of cradles, or coarse slight bedsteads, were likewise taken out among the hospital stores it would be so much the better.

Where a siege is expected which will take up time, and where no accommodations for the sick can be had till the siege is over, a ship or two, with boards, and other necessities for building large sheds, or temporary huts, for the sick, as proposed by Dr. Brocklesby, ought to go along with the fleet, or meet them at the place of their destination. Such thatched sheds, or huts, are very necessary in the warm climates, as the perpendicular rays of the sun, beating upon canvass,

make tents intolerably hot. When any of our own settlements happen to be near the place attacked, a fixed hospital may be established there; either in houses, if proper ones can be found; or in temporary sheds or huts erected for that purpose; and some vessels, properly fitted up, may be kept going with the sick and wounded, and bringing back the recovered men: or what will often answer better in expeditions to warm climates, is to fit up some of the transports which have landed the troops as hospital-ships; and when they have taken a sufficient number of sick aboard, to send them out a little way to sea; for it has been found by experience that sick recover much faster, and in a much greater proportion with respect to numbers when sent to sea, than if they remain ashore, or in a harbour, in a warm climate.—And in expeditions to these climates, a number of the transports-ships can always be spared for this service, so soon as the troops are landed; for the necessary military operations soon destroy a much greater number of men, than the difference between the number of sick and of men in health that are commonly put aboard of each ship.

When

When expeditions are fitted out against any place in the West Indies, an hospital may be fitted up at New York, or at some other of our northern settlements in North America, for the reception of those men whose constitutions may be most broke by the diseases of the West Indies.

S E C T. VIII.

Of guards, nurses, and patients in hospitals.

AT every military hospital a serjeant's guard ought to mount; and centinels be placed at the doors of the hospital, 1. To prevent all visitors, who have not proper leave, from coming into the hospitals; as such people oftentimes crowd the wards, disturb the sick, and are apt to catch infectious distempers, and to spread them among the troops. 2. To take care that the patients do not go out of the hospital without having a ticket * of leave for that purpose, signed by the physician, surgeon, or apothecary, be-

serjeant.

* At every hospital there ought to be a number of printed tickets lying ready to be filled up and signed by the physicians and surgeons, and no man ought to be allowed to go out without a ticket so signed.

longing to the hospital. 3. To prevent spirituous liquors, or other things of that kind, being clandestinely carried into the hospital.

The serjeant of the guard, attended by the ward-master, ought, every morning, to go round the wards to call a roll, and see that every man is in his ward; and to do the same at night before the hospital doors are shut, and at this time to order every person out of the hospital who does not belong to it. And the serjeant, every morning, ought to report to the physician, surgeon, or apothecary, every man's name who was found to be absent at roll-calling; and whether he found every thing regular and in good order in going his rounds.

Every large military hospital ought to have one head nurse, and a sufficient number of other nurses, to attend and take care of the sick.

Orders to the following purport, hung up in every military hospital, would serve to shew the nurses and patients what their duty is, and to maintain regularity and good order through the whole hospital,

Matron,

Matron, or head nurse.

Every matron, or head nurse, is to go round all the wards of the hospital at least twice a day, morning and evening; to see that the nurses keep their wards clean; that they behave themselves soberly and regularly, and give due attendance to their patients; and to examine the diet of their patients, and see that it is good and well dressed; and if she finds any thing amiss, to report the same to the physician, surgeon, or apothecary, of the hospital.

Common nurses.

1. The nurses are to give due attendance to their patients; and to keep them always as neat and clean, as the nature of their distempers will admit of; to give them their diet regularly; to be particularly careful to see them take the medicines ordered by the physicians, according to the directions given; to report to the physician, surgeon, or apothecary, any faults or irregularities which any of their patients may have committed; and to acquaint the ward-master and head nurse of the death of any of their patients as soon

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as it happens, that proper care may be taken of their cloaths and effects.

2. They are to keep their wards extremely clean, to sprinkle them every morning with vinegar, and to fumigate them with the smoke of wetted gunpowder, or of frankincense, or any other aromatic that may be thought proper; in fair weather to keep open the windows of their wards, twice or thrice a day, for a longer or shorter time, as the weather will permit; to attend at the steward's room for the provisions of the patients at the hours appointed for that purpose; and to pay implicit obedience to the matron, or head nurse, in what relates to their duty; and punctually to obey all orders they receive from the physician, surgeon, or apothecary of the hospital.

3. They are to keep themselves clean and decently dressed, and to observe the strictest rules of sobriety; remembering, that if any one is found intoxicated with liquor, that she is immediately to be sent to the guard, and afterwards discharged.

4. They are not to absent themselves from their wards, unless when employed in the discharge of their duty; nor to go out of the hospital to which they belong, without having

ing a ticket of leave signed by the physician, surgeon, apothecary, or head nurse belonging to the hospital.

5. They are not to throw nastiness of any kind out at the windows, but to carry it to the common necessaries, and to empty the chamber-pots and close-stools as soon as used, and be careful to wash them before they bring them back.

6. They are not, upon any pretence whatever, to alter the diet ordered by the physicians or surgeons to the patients on the diet-boards ; nor to suffer their patients to use any other diet than what is allowed by the hospital ; nor are they to bring, or allow others to bring, meat, spirituous liquors, or other things of that kind, into their wards, except what is allowed by the physicians or surgeons. Whenever any thing of this kind is found in any of the wards, it ought immediately to be thrown into the common necessary ; and if it be found in the custody of a nurse, she ought to be confined in the guard, or discharged.

7. Nurses guilty of great neglect of duty, or of getting drunk and using their patients ill, or of stealing, or concealing or taking away the effects of men who die in the hospital,

pital, are to be immediately sent to the guard, and reported to the commanding officer of the place, that they may be tried by a court-martial, and be confined, whipped, or otherwise punished, as the military law directs; all followers of armies on foreign service being equally subject to the military law as the soldiers themselves.

Patients.

1. All sick soldiers, on their arrival at a military hospital, are to be washed all over with warm water, or to go into a warm bath; and afterwards to wash their face and hands every morning, and their feet occasionally, with warm water and soap, brought round every morning by the nurses for that purpose; and they ought to comb their head every day. If they be too weak to wash and comb themselves, it is to be done by their nurses.

2. Every patient is to be shaved and have clean linen twice a week, or oftener if requisite.

3. They are punctually to obey the directions given them, and to take the medicines ordered by the physician ; and none to be allowed

allowed to go out of the hospital without a ticket of leave signed by the physician, surgeon, or apothecary, of the hospital.

4. They must commit no disorder or riot, but in all respects behave themselves well.

5. If any man disobey the orders he receives from the physicians or surgeons, or is irregular in conduct, gets drunk, and commits riots in the hospital, or is found guilty of theft or other crimes, the same is to be reported to the commanding officer of the place, and he to be tried by a court-martial, and punished as soon as his strength will permit.

S E C T. IX.

Of discharging men from hospitals, and of convalescent hospitals.

IN conducting the military hospitals, we found that it was always right to discharge the patients from the sick hospitals as soon as they were recovered, and to send them either to billet, or to a convalescent hospital; because recovered men are always the most riotous; besides they crowded the hospitals, and were in danger of catching fresh disorders from those who were sick; and therefore the

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recovering men in every hospital ought to be reviewed once or twice a week by the physician or surgeon, and the names of such men as are well enough, to be marked; in order that they may be sent the next day to the convalescent hospital, or to billet. A return of those marked for billet ought immediately to be sent to the officers on convalescent duty.

When a convalescent hospital is established, it ought to be put under proper regulations; the following are those which I drew up for that established at Osnabruck, in April 1761, and which were found to answer the purpose intended.

Regulations for a convalescent hospital.

1. That this hospital be entirely occupied by such men as are recovered from diseases; that no men be sent there but those whose names are returned to the purveyor's office by the physician or surgeon of the hospital.

2. That all the patients shall be upon full diet, unless in particular cases it be ordered otherwise by the physician or surgeon.

3. That all the patients shall breakfast, dine, and sup, at regular stated hours, in the
hall

hall appointed for that purpose : breakfast to be ready at nine, dinner at one, and supper at seven o'clock in the evening.

4. That no patient shall carry up any victuals into the wards appointed for sleeping in ; and if any patient does not attend at the regular hours of meals, no allowance of victuals shall be made him in the place of such meals, unless he has been absent on hospital business, or been confined to bed by sickness.

5. That as soon as the men are come down stairs to breakfast, the wards in which they sleep shall be cleaned out and sprinkled with vinegar, and the windows opened to air them.

6. That the doors of this hospital shall be locked every night at eight o'clock, and no man be allowed to come in or go out after that time. The doors to be opened again at seven o'clock in the morning.

7. That the said hospital is to be visited two or three times a week by the physician, surgeon, and apothecary, who are to see that the above orders are complied with ; to examine the diet, and take care that every thing is carried on properly ; and to prescribe for any little disorders the men may be affected with.

8. That

7/ 8. That one of the hospital mates be appointed to visit this hospital daily, to administer any medicines which may have been prescribed by the physician; to apply any dressings ordered by the surgeon; and to acquaint the physician or surgeon if any of the men be so bad as to require their attendance, or to be sent back again to the sick hospital.

9. That for the better executing these regulations, orderly serjeants or corporals be appointed for the care of the men; who shall mount a guard of six or more of such of the patients of the said hospital as are fit for this duty—That the serjeants are to call a roll of all the patients regularly three times a day, before breakfast, dinner, and supper; to see that the men behave themselves soberly and decently; and that they keep themselves clean, and commit no riots; and to confine in the guard such as commit riots and other irregularities, or whom they find drunk, or who stay out all night; and to report the same to the officer on duty. And in good weather they ought once or twice a day to order out all those who are strong, and to march them for half an hour, or an hour into the country, or on the parade, to give them

them fresh air, which will forward greatly the re-establishment of their health; but care ought to be taken not to march them beyond their strength; nor to order out men who are very weak.

10. That an officer on convalescent duty do visit the said hospital daily at the times of roll-calling, to see that every thing be carried on properly; and to receive the reports from the serjeants, and give what orders he may think proper for the better regulating the said hospital.

11. That if at any time it should happen that there are more convalescents than the hospital can hold conveniently, a review be made of all the patients, and the strongest and most healthy be sent to billet.

12. That a review be always made, when any party is going to join the army, to pick out the men who are fit to join their regiments.

S E C T. X.

Of sending home and exchanging men who have had much sickness during a campaign.

IT would be of great use to the service if, when men's constitutions have been much weakened by repeated fevers, fluxes, or other

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disorders in the time of service, and they were not likely to recover their strength before the ensuing campaign, if they were sent home and other strong healthy men sent to supply their place; which might be easily done, if at the breaking out of every war, two or three companies were added to each regiment, and these companies remained always at home, to recruit for their respective regiments; as well as to be a defence to this kingdom; for then, at the end of every campaign, the regiments on service could exchange those men who were weakened by diseases, for others who were healthy and strong; and those men whose constitutions were not totally ruined by sickness, would recruit their health and strength by remaining for a year or two with the additional companies where the duty was easy. In conversing on this subject with the late Dr. John Hume, who had served long as a surgeon in the navy, and had had the care of the naval hospital at Jamaica for ten years, he made the following judicious remarks with respect to seamen serving in the West-Indies, and the same may be said of soldiers.

When the intermitting or remitting fevers continue obstinate, or when the distempers

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subsequent on them come on; or that there is room to think that they are approaching, the natives and inhabitants often go to sea in the king's ships for a cruise, and sometimes they go to North America, and they often return perfectly recovered, as to their appetite, flesh, and strength, both from that continent and from cruising. When seamen are wore down by frequent returns of these fevers, or by the dry belly-ache, by which they often lose the use of their limbs, nothing is so effectual as going to sea; and I used to take every opportunity of sending such men as were likely to receive benefit, either in their own, or in any other ship that was going out. By these means a number of men recovered, who would have been lost by lingering in hospitals. If they happened to return without being cured, on application to the commander in chief, they were sent to England by the first conveyance, whither that happened to be by the king's or merchant-ships.

Humanity cannot be better exerted, nor more effectual service be rendered to the public, than by a careful attention to preserve the lives of seamen, by discharging them from West India hospitals, while they are likely

to receive benefit, before the frequent returns of these diseases, that make their being sent to sea necessary, have so far reduced them as to render their recovery doubtful.

Difficulties in doing this have sometimes occurred, but nothing is so easy as the establishment of a regulation that would effectually remove them; and it is obvious, of what importance such a regulation would prove to every one who has served any time in the West Indies, and seen numbers of men sent to sea from the hospitals in a very declining way, who have returned healthy and well from a cruise, after having been at sea for some time*.

S E C T XI.

Of physical officers employed about an hospital.

*T*HE physical officers employed in the military hospitals, are physicians, surgeons, and apothecaries. (1764).

No person ought to be appointed a physician to the army, or military hospitals,

* Dr. Hume's Observations on the yellow and remitting and intermitting Fevers, and on the Health of Seamen, have since been published in Letters and Essays on West-India Diseases; printed for Mr. Murray, Bookseller, No. 32. Fleet-street.

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without previously undergoing the same examination at the College of Physicians, as those do who enter fellows and licentiates of the college, that none but proper persons may be employed. On such examinations the physician general to the army ought to be allowed to sit as one of the censors of the college.

The surgeons are all obliged to pass an examination at Surgeons-Hall before they are appointed; and the apothecaries ought in like manner to pass an examination at Apothecaries-Hall.

The mates employed in the service ought, previous to their appointment, to be examined both in surgery and pharmacy, as the service commonly requires their acting in both branches.

In the beginning of the late war of 1755, his late royal highness William duke of Cumberland, instituted an hospital-board composed of the physicians and surgeons of the army, and the then purveyor, called at that time director, by whom all hospital affairs were considered and planned. This board recommended all persons who were to be employed in any branch of the physical department, or in any capacity about military

hospitals. Such a board will always be of the greatest use in planning and fitting out hospitals for foreign service ; but when hospitals are established in foreign parts, the preferment ought to go amongst those employed on that service ; and all recommendations ought to come from the physicians and surgeons serving in the hospitals where the vacancies happen.

The direction of all military hospitals ought always to be committed to the physicians, who have the immediate care of hospitals.

When an army is acting on a continent, and there is a number of hospitals in different places, the physician who attends the commander in chief ought to be made physician general and director of the hospitals, with proper appointments ; and all orders from head-quarters ought to go immediately thro' this channel.

Every other physician at the different hospitals ought to direct every thing about the hospital which he attends, and his orders ought to be punctually obeyed ; and he ought to keep up a constant correspondence with the physician general ; acquainting him from time to time with the state of the hospital, and

and what is wanted for it; and he ought punctually to obey whatever orders he receives from the physician general.

If there be separate hospitals for the surgery patients, the eldest surgeon ought to direct every thing in the hospital he attends; and when any thing is wanted for his hospital, to report the same to the physician general.

S E C T. XII.

Of the directing and purveying branches about hospitals.

THE directing and purveying branches ought never to be entrusted to the same person, as the temptation of accumulating wealth has at all times, and in all services, given rise to the grossest abuses, which have been a great detriment to the service, as well as to the poor wounded and sick soldiers, and has occasioned the loss of many lives. And therefore neither the physician general, nor any of the physicians or surgeons of the army, or any other person concerned in the direction of the military hospitals, ought ever to act as purveyor or commissary; nor ought they ever to have any thing to do

with the accounts, contracts, or any other money affairs relating to the hospital ; and if ever they be found to intermeddle in these affairs, they ought to be immediately dismissed the service.

I cannot help here taking notice, that this very absurd practice of appointing some physical person to be both director and purveyor, or contractor without control, has crept into our service ; and been, on more occasions than one, of the greatest detriment to the poor distressed soldiers. For as the commander in chief of an army, in time of service, has always a great deal to do in the way of his own profession, and is often not well acquainted with the routine of hospital duty, he trusts every thing relative to hospitals to the director ; who, if not thoroughly honest, and proof against temptation, is apt to follow such plans (however detrimental to the service) as give him the greatest opportunity of imposing on government and accumulating wealth ; by acting in this capacity of contractor without control, as well as of director.—And as the director is commonly much at head-quarters, and has the ear of the commander in chief, if any physician or surgeon attending the hospitals, complains of
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the abuses that are committed, he is represented at head-quarters by the director as a troublesome discontented man ; and instead of his complaints being attended to, he is, perhaps, checked for finding fault, and sent to some distant hospital, or on some disagreeable duty, to be out of the way of making farther observations on the director's conduct.

I therefore think, that the purveying or contracting branch ought to be entirely distinct from the physical. The purveyors or contractors ought punctually to obey whatever orders they receive from the physicians or surgeons ; to provide every thing for the hospital ; to keep regular accounts of all the men who come into, or go out of the hospitals ; and from time to time to make returns to head-quarters of all the men in hospitals ; and their accounts ought to be controlled by such persons as the government may think proper.

And they ought never to be allowed to assume the name of Director, which they often do, as that name is apt to mislead military officers, and to make them believe that government has committed the charge of the hospitals to their care.

S E C T. XIII.

Of the attendance of the physical officers on the sick.

Y EVERY physician and surgeon of a military hospital ought to visit the sick at regular stated hours, and the mates to attend and go round with them, and receive and execute their orders.

§ Every mate ought to have a certain number of patients allotted him, for whom he is to make up all medicines, dress all sores, and execute whatever orders he receives from the physician, surgeon, or apothecary. That the mates may know and execute their duty, proper orders in writing should be hung up in the apothecary's shop for that purpose. Y The following are those which I gave out at all the hospitals I attended in Germany.

§ *Orders for the mates.*

1. That all the gentlemen do attend at the apothecary's shop every morning at eight o'clock, to assist in making up the common medicines of the day, and afterwards to go round

round the hospitals with the physicians and surgeons.

2. That every mate have a book for writing the prescriptions of the physicians in, which is to be kept in the following order. —First, to mark the patient's name and regiment; then the day of his entry into the hospital and his disorder; then the prescriptions of the physician; and after all the day of his discharge, or of his death. *Ex. gr.*

John Clarke, 20th regiment. Jan. 1. Fever.

Jan. 1. V. S. unc. x.—H. salin. cum pulv. contrayerv. 4^r. die.—2. Emplastr. vesicat. dorso, &c.

Discharged or dead, Jan. 28.

3. That every mate make up himself the physician's prescriptions for his own patients, and afterwards go round and administer them, or give them to his patients with proper directions; that he bleed his own patients, and dress any slight sores they may have, which do not require their being sent to the surgery hospital.

4. That every mate go round amongst his patients in the evening, to see that every
thing

thing is well conducted, and to report to the physician or apothecary if any thing extraordinary happens.

Y 5. That two of the mates attend all day at the apothecary's shop, to receive any sick that may arrive, and to place them properly; to make up what medicines they may immediately want; to order each of them a mess of water-gruel; and if any thing extraordinary occurs, to send an orderly man to acquaint the physician or apothecary with the same. The orderly mates to make up likewise for officers, or others, all prescriptions sent to the apothecary's shop through the day.

or Y Y A joint of meat, roasted or boiled, for dinner, and a bottle of wine, was allowed to the orderly mates, by lord Granby's order, that they might not absent themselves from their duty.—Where there was conveniency for it, a mate lodged in the hospital.

The apothecary ought to take care of the medicines; to go round the hospitals in the morning before the time of the physician's visiting; to see that the wards are kept in proper order; that the nurses and other servants have done their duty; to examine into the state of the sick, and to see that the provisions

sions are good; and make a faithful report of all these things to the physician when he arrives.—To take care that the mates prepare in the morning the medicines that are commonly wanted for the day; and that they afterwards make up faithfully the prescriptions of the physician; to go round the hospital again in the evening, to see that the sick have got their medicines regularly; and to make the same enquiries as in the morning.

The apothecary should always be lodged near the hospital, to assist in case of any accidents happening, or of sick arriving at the hospital.

S E C T. XIV.

Of the means to be used by the physical officers to guard themselves against infectious disorders.

WHEN there are any strong infectious disorders in military hospitals, the physical gentlemen may use the following precautions to guard themselves against infection.

1. Never to visit the sick with an empty stomach; but to eat breakfast before they go into the hospital.

1. To

2. To have a suit of cloaths reserved for visiting the hospital, and a waxed linen coat to wear above them in going round the wards; and as soon as they have come out of the hospital, to wash and change their linen and cloaths.

3. Before they go into the wards, to order that they be well cleaned out, and sprinkled with vinegar, and afterwards fumigated, and aired by opening the windows, or by working the ventilators.

4. If the infection be very strong, to take a glass of the spirituous tincture of the bark just before they go into the hospital *.

5. To put small rolls of lint, dipped in camphorated spirits, up the nostrils, and to direct a vessel, with warm camphorated vinegar, to be carried round, and held near the patients they are examining.

6. In examining patients affected with the petechial fever, or any other malignant dis-

* Mindererus, in times when the air is infectious, recommends the moistening of the temples, mouth, nostrils, and wrists, with vinegar, in which rue, lavender, elder-flowers, and other aromatics have been infused; and likewise the swallowing a good spoonful of it every morning. And in cold weather, he advises to drink a spoonful of brandy or gin, in which angelica, zedoary, white dittany, dried orange peel, and a little camphor, have been infused. See his *Medicina Militaris*, English Translation, p. 24 25.

temper, to stand at some little distance, and ask what questions they may think proper; and when they come near, to feel the pulse, and examine the skin, not to inspire while their head is near the patient's body; but after being fully satisfied in these points, to retire a little, and ask what other questions may be necessary.

S E C T. XV.

Of military rank for commissioned physical officers.

IT would be right to establish some military rank for every commissioned officer of the hospital on service, and to settle the same subordination in the physical as in the military department. By these means, the service would be carried on with greater order, and more advantage to the sick.

And it would be right, in times of war, to add a clause in the mutiny bill to allow any military officer on convalescent duty to call in the commissioned physical officers to assist in making up a court-martial when there are not a sufficient number of military officers in a place, to try convalescent soldiers guilty of

of crimes. For in times of service, very often a sufficient number of military officers cannot be spared to be on duty at the different military hospitals; and at all such places the convalescents are generally very disorderly, when they know that there is not a sufficient number of officers to form a court-martial for punishing them. Wherever there are a sufficient number of military officers, no physical officer ought ever to be called upon as a member of a court-martial.

S E C T. XVI.

Of a military inspector of hospitals; and officers appointed to convalescent duty.

MEN, in time of service, are often apt to saunter in and about hospitals, and there learn all manner of debaucheries, and lose all sense of discipline; and therefore, to keep up order and decorum, there ought to be, at every fixed and every large military hospital, a military inspector or commander, an officer of known activity and probity; and a number of officers on convalescent duty sufficient to form a court-martial whenever required.

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The duty of the military inspector, or commander, should be, to take care of all convalecents on billet; to see that the officers under him do their duty, and maintain the same regularity and discipline among the men belonging to their respective corps, as if they were with their regiments; and that the men attend the parade and roll-calling; and that they always appear neat and clean.

He ought, from time to time, to visit the hospitals; to see that they are kept clean; to enquire if the men behave well, if the diet is good, and the officers, nurses, and servants, do their duty; and if he finds any thing amiss, to report the same to the physicians and surgeons of the hospital, or to the purveyor or commissary, or others, under whose department it may be, that the same may be immediately rectified; and if he finds that the superior officers of the hospital overlook such abuses, notwithstanding his representations, to report the same immediately to head quarters.

He ought to order one of the officers on convalescent duty to visit the hospitals daily, to make the enquiries above-mentioned, and to give him a report of the same in writing.

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See Jackson. 1845; & Lancet for 1854.

The purveyor or commissary ought to make a return to him twice or thrice a week of every man admitted into, or discharged from the hospitals, or who dies in them; marking in the return the name of every man, and the company and regiment he belongs to; that he may report the same to the officers of the different brigades or regiments.

✓ The military inspector ought to have the power of providing billets for all officers and soldiers about hospitals; and the names of all men to be discharged from hospitals should be sent to him the day before they are discharged, that he may provide billets for them; and next day the men ought to march from the hospitals to the parade, to receive their billets, and the orders of the military inspector, and of the officers of the corps they belong to.

The military inspector ought to see that the arms of the sick men, and the arms and cloaths of those who die and are lodged in the magazines, be properly taken care of; and that the stores of the different regiments be properly looked after.

As the service often makes it necessary at military hospitals, where the number of sick is great, to employ the convalescent soldiers

diers * as orderly men and servants about hospitals ; all men thus employed ought to have a special leave from the military inspector for so doing ; and no man should be employed in any capacity as a servant about an hospital, who at that time is on the books as a patient. And all men employed about the hospital ought to be reviewed once a week by the military inspector, and likewise whenever a party of convalescents is going to join the army, or their regiments ; that no man may be allowed to remain with the hospital, after he is fit to do duty in his regiment.

When a party of convalescent men is sent to join their respective regiments, one or two officers ought always to accompany them, in order to keep them regular, and to prevent their doing mischief.—Their marches ought to be short and easy ; and some horses or waggons ought to be ordered with them, to carry the baggage and bring up the weak men ; and when they join their regiments

* In the French hospitals there are always a number of men who attend their sick who belong to the hospital, so that they have no occasion to employ their convalescents, as we are often obliged to do, where the sick are attended by nurses, who are commonly soldiers' wives, and not so capable of doing such laborious work as the men.

they ought to be put on the easiest least fatiguing duties till they recruit their strength.

When the military inspector is absent, the eldest officer on convalescent duty ought to act in his place.

Every officer sent on convalescent duty ought, as soon as he arrives at the place where the hospital is, to wait on the commandant, or military inspector ; to acquaint him of his arrival, and to receive his commands. He ought then to go to the purveyor or commissary's office, to get a list of all the soldiers who are in or about the hospital, and belong to the regiment or brigade he is employed for, wherein those on billet are distinguished from those in hospitals. The next day he ought to parade all those marked on billet, to see if the number of men agrees with the list given him, and to examine in what state each man is, and how he is employed ; and then he ought to go round the hospitals, attended by an orderly serjeant, to see all the men in the hospitals, and to know if the list given him at the purveyor's office was right ; and afterwards he ought to send every day a serjeant or corporal to see the men in hospitals, and to report to him when any men are discharged or die.—And he ought to procure

cure from the military inspector a return of all the men of his corps, who are either admitted into, or discharged from hospitals, on the days when such returns are made. He ought to make all his men on billet appear regularly on the parade at roll-calling, and to oblige them to keep themselves clean and their arms in good order, and to endeavour to preserve the same regularity and discipline as when they are with their regiments. And whenever a party is to be sent to join their regiments, he ought to have all his men particularly examined; and those men who are found to be perfectly recovered, should be sent to their regiments.

If every officer on convalescent duty conform to these directions, no man can ever be detained without his knowledge in or about hospitals, as he must always know where every man is, in what state of health, and how he is employed; and may at any time be able to make a return to the brigade or regiment for which he is employed, of every man who is admitted, discharged, or dies in the hospital.

S E C T. XVII.

Of the manner in which the sick were taken care of in England, at the fixed camp at Cox-heath, in the years 1778 and 1779.

IN the years 1778 and 1779, the sick, except those ill of the small-pox, of the two largest camps in England, Cox-heath and Warley-common, were mostly taken care of by the surgeons of the regiments in their own regimental hospitals, who were each of them allowed seven pounds ten shillings per month, besides the common medicine money, for providing an hospital, nurses, and what other things were wanted for the sick; and a physician and surgeon were appointed to each camp, to visit those taken ill of the small-pox, in an hospital hired for that purpose, at some distance from camp, and put under their particular care; and likewise to visit occasionally the regimental hospitals, to see that they were properly conducted; and to give their advice in particular cases, when required by the surgeons of the regiments.

1778.

1778.

On the 26th of June 1778, I was ordered to attend the camp at Cox-heath. The hospital hired for the reception of those taken ill of the small-pox, which was committed to my particular care, was situated in the northwest corner of the heath about a mile from camp.

After being properly fitted up, it was conducted in the following manner :

An hospital mate was appointed, who lodged near the hospital, and was in constant attendance to make up what medicines were wanted for the sick, to bleed them when ordered, to see that the nurses did their duty, and to admit and place properly such sick as were sent from camp ; and to obey whatever orders he received from the physician or surgeon.

An orderly serjeant was appointed to the hospital, whose business it was to collect the pay of the men from their different regiments, and to buy with it the daily provisions ; and to keep an account of all the money he laid out for the use of the hospital, and to deliver in these accounts from time to time to the physician.

Y An orderly man and a sufficient number of nurses were hired to attend the sick.

O The rent of the hospital, the orderly serjeant, nurses, and orderly men, were all paid by government, as likewise what wine, or other things, were ordered for the sick by the physician or surgeon, which their own pay could not afford; and the physician had a power granted him to draw on the inspector-general for what money was wanted for these purposes.

Y And the physician had it in his instructions, that in case of any extraordinary sickness he should write either to the commander in chief, or secretary at war, or the inspector, to acquaint them thereof, that a sufficient number of hospital mates, or even commissioned officers, if wanted, should be sent down to take care of the sick, and to hire such places for hospitals as he thought were proper for that purpose, and would be wanted.

The common diet for the sick in this hospital was ordered to be the same as that used in the regimental hospitals, which shall be mentioned presently.

On my arrival at Cox-heath, the honourable lieutenant-general Keppel, who commanded

manded the camp, ever attentive to the minutest article, for the good of the service, desired that I would let the surgeons of the different regiments know in what manner the sick were to be taken care of in this camp; and to draw out general instructions for the management of the regimental hospitals, that they might all be put on the same footing, and conducted in the same manner.

In compliance with this order, the following instructions were drawn out, and given to each of the surgeons of the regiments in camp.

INSTRUCTIONS given to the regimental surgeons, relative to the sick and hospitals of their different regiments.

In order that the surgeons of the different regiments might know in what manner it is proposed that the sick of this camp should be taken care of, it was notified unto them :

1. That it is intended that every regiment should take care of their own sick ; and that no general hospital should be opened, except a small one for the reception of men taken ill of the small-pox ; unless it should happen through

through bad weather, or by any other cause, that any of the regiments should have more sick than the surgeon and his mate could take care of.

2. That it is expected that every surgeon do provide or hire the largest most airy place he can find near his own corps for an hospital.

3. That the said hospital be kept as clean as possible, that it be swept out twice a day, and afterwards sprinkled with vinegar; and if the floor be of wood, that it be washed from time to time.

4. That more or fewer men be put into each room or ward, according as it is more or less airy, and the cielings are higher or lower; lofty wards admitting more sick than those whose cielings are low; and it is particularly recommended not to crowd the wards too much with sick.

5. That the palliasses for the sick be laid on straw; and that the straw be confined by a piece of board eight or ten inches high, put round the sides of the bed.

6. That the straw of the palliasses, and that put below them, be changed for fresh straw from time to time; and if a man dies, that the straw be burnt, and the palliasses
and

and bedding on which he lay be cleaned and well aired before they are again used.

7. That the windows and doors of the hospital be kept open through the day during the warm weather; and when the weather becomes cool, that they be kept open for some time, two or three times a day for renewing the air of the hospital.

8. That if there be a chimney in any room, it ought always to be kept open, and never stopt up, as it is often done in private houses in summer; for the chimney is one of the best ventilators a room can have.

9. That the sick ought to be shaved, and to have clean linen at least twice a week; and the hands and face of every man ought to be washed every morning; and the nurses ought to carry round a pailful of water with some bran or oat-meal, or soap, and a hand-towel to those who are confined to bed; and they ought to wash with a wetted corner of a cloth, the hands and face of those men who are too weak to wash themselves.

10. Every twelve or fourteen men, confined to bed by fevers, ought to have a nurse to attend them. (10)

11. Every regimental hospital ought to have a privy or necessary, so far from the hospital as not

not to be offensive ; and no man that is able to walk about, ought to ease himself near the hospital, but in the necessary.—Where there is no proper necessary near the hospital, a pit ought to be dug, and a seat put over it as in camp ; and earth thrown on the excrement from time to time ; and when requisite, a new one ought to be made, and the old one filled up.

12. That nothing ought to be so much recommended to those who have the care of hospitals, as to keep the sick, and every thing about them extremely clean, and the wards well aired.

13. The cloaths of soldiers, who die in hospitals, ought to be put in a smoke-house and well fumigated, and afterwards well aired and brushed before they be put into the regimental storehouse.

14. All convalescent men ought to be examined twice a week, and those fit for duty sent to camp ; and if there be many sick in the hospital, the recovered men who are too weak for duty, ought in summer to be put into convalescent tents, till they recover their strength.

15. That those men who labour under gonorrhœas, without any other symptom of the
vene-

Y venereal disorder, may do duty in camp, being allowed every morning to attend the surgeon for advice and medicines.

16. That the officers of the regiment ought to be made acquainted with these instructions; and that an officer from each regiment ought to visit the hospital daily, to see that it is kept in good order, and the sick are properly taken care of, and to report to the commanding officer in what state he finds them.

17. That the following diet is recommended for the use of the sick in the regimental hospital; it being such as the pay of a soldier can afford.

Breakfast and supper.

A pint of water-gruel, or of rice-gruel.

And in fevers, or other particular cases, bread made into panada, with the addition of some brown sugar, and in particular cases where judged proper, a spoonful or two of raisin wine.

Dinner.

Broth, or soup made with meat, to which should be added carrot, turnep, or other vegetables,

getables, and some of the barley or rice with which the barley or rice-water for drink was made.

A pint of this broth with bread, to be allowed to each sick or very weak man; and besides this, half a pound of the boiled meat to be allowed to each convalescent, and to every recovering man to whom the surgeon shall direct.

Drink.

The common drink of the hospital to be barley, or rice-water, with the addition of a little brown sugar; to which may be added some lemon juice, or cream of tartar; and in cases where the surgeon judges it proper, a little brandy or wine likewise.

In fevers where wine is wanted, raisin wine, or cyder, may for the most part be used, though in some low cases good old red port is preferable to either.

1779.

This year lieutenant-general Pierfon commanded the army at Cox-heath; the sick were taken care of in the same manner as last, except that in the beginning of September, when an epidemical fever appeared among

among the troops, and some of the regimental hospitals were too much crowded; a small general hospital, capable of holding twenty-five sick, (being the only place that could be got) was fitted up, and filled with men ill of fevers from those regimental hospitals that were too full; at the same time, that some men ill of the venereal disorder, who had had the small-pox, were taken from these hospitals and received into the small-pox hospital, where there were accidentally twenty-two beds empty at the time. This new hospital was conducted in the same manner as the one for small-pox.

Lieutenant-general Pierſon, whoſe attention and humanity to the ſick ſoldier cannot be too much commended, approved of the inſtructions given to the regimental ſurgeons the preceding year, and had them repeated in the orders this.

P A R T III.

OF THE

E N C A M P M E N T S

A T

C O X - H E A T H,

In the YEARS 1778 and 1779.

C H A P. I.

Of the Encampment in the Year 1778.

S E C T. I.

*Of the number of regiments, and situation, &c.
of the ground on which they were encamped.*

THIS year there being an alarm that the French intended to invade this country, the militia were ordered out, and camps formed in different parts of the kingdom. One at Cox-heath—one at Warley—one at Winchester—one at Bury St. Edmund's for

for the cavalry—besides several small ones at Portsmouth—Plymouth—Chatham, and other parts of the kingdom.

On the 26th of June I was ordered to attend that at Cox-heath, which is situated three miles south of the town of Maidstone, in Kent, where I arrived the 2d of July.

This camp consisted of eighteen battalions of infantry encamped in one line, with one regiment of dragoons on their right; and a detachment of 300 men of the regiment of artillery, with a park of great guns, and three small corps of Welch militia attached to them, encamped in the rear of the right wing. This camp was commanded by the hon. lieut. gen. Keppel.

The regiments which formed the line, were,

Right wing.

1 reg. dragoons—1st battal. of 1st reg. of infantry—59th reg.—2d battal. of 1st reg. S. Hampshire M.—W. Middlesex M.—Surry M.—S. Lincoln M.—Hertfordshire M.—W. Suffolk M.

M. *Left*

Left wing.

Cheshire M.—Berkshire M.—Shropshire M.—E. Essex M.—Derbyshire M.—W. Riding York M.—2d reg.—65 reg.—18 reg.

In rear of right wing.

300 men of the royal artillery, with their park of guns.—Montgomery M.—Radnor M.—Pembroke M.

The ground the troops were encamped on, is a plain called Cox-heath on the top of a hill, three miles south from the town of Maidstone in Kent.

At the bottom of the hill, on the north side, is the village of Loose, and from thence by the road up the hill, it is about half a mile to camp, though the perpendicular height of the hill from thence does not exceed 300 feet.

The length of the encampment from the public-house, at the sign of the Cock, in the village of Boughton on the left, to the copse of wood on the right of the cavalry, measures about two miles and a half—and the breadth of Cox-heath, in the middle where

where the great road from Maidstone crosses it, is about half a mile.—In the middle of this ground the troops were encamped in a line extending from east to west.

The heath is every where surrounded with hedges, and is narrower on the left than on right, and forms somewhat the figure of an oblong square, if I may be allowed to use that expression.

The ground rises towards the hedges on the south in front of the camp, but so gradually as to appear a plain with that particular part the troops were encamped on this year; but there is a visible descent from the camp to the hedges in the rear.—And the ground is higher on the west end (or right) than on the east (or left); but the descent is so gradual as scarce to be perceived.

When the troops came first to Cox-heath it was covered with fern, heath, brush-wood, and various wild shrubs and bushes, but was soon cleared in the front, and on the parts the camp was placed.

Behind the hedges which every where surround the camp, there are inclosed fields, and below them woods every where to the bottom of the hill—and there are plentiful springs of fine water on all sides, particularly

towards the bottom of the hill on the north side.

The country round Cox-heath is every where very fertile, inclosed and well wooded. —It is hilly on the north-east and west sides, but on the south, at the bottom of the hill, is flat and low; there being on that side a flat country, above twenty miles in breadth and more in length, called the Wold of Kent, which was formerly all a wood, and though it is now well cultivated and inclosed, it is still well wooded, and contains large quantities of fine oak and other useful timber; but the flatness of the country, joined to the quantity of wood, makes the Wold very subject to remitting fevers and agues.

The soil on Cox-heath is a clay mixed with sand, and in digging you come very soon to rock, particularly on the right.—In summer wet runs off readily, and even after very heavy showers of some days continuance, it is presently dry; but when the winter sets in, and it is thoroughly wetted, it becomes very slippery and disagreeable.

Cox-heath is reckoned one of the most healthy spots in Kent, during the summer and autumn, but from its high situation it is cold and bleak in winter.

The

The troops began to come to Cox-heath in June, and before the end of the month the whole were arrived except the second battalion of the royal (or first regiment) and the Radnor and Montgomeryshire militia.

S E C T. II.

Account of the weather during the time of the encampment.

IN the year 1778, the spring was dry and cold; the summer dry and remarkably hot; the end of September and October cold; and the beginning of November wet and cold, though after the first ten days it became warm and pleasant.

June.

June was very warm and dry.

As I had no instrument with me for measuring the quantity of rain that fell at camp, I have subjoined to the general account of the weather for each month, the quantity of rain said to have fallen at Waltham-abbey, in Essex, which is about forty-eight miles from Cox-heath; according to the Meteorological Observations, which are in the Al-

manac Journal, published by Mr. Carnan, Bookseller in St. Paul's Church-yard.

There fell but little rain this month, only .605, or a very little more than $\frac{6}{10}$ th of an inch in depth.

July.

July was remarkably hot till the 21st; the heat raising the quicksilver in Fahrenheit's thermometer, between three and four o'clock in the afternoon to 76, 78, 79 and 80; and on the 12th of the month to 82, previous to a storm of thunder and lightning, and a very heavy rain, which began at about six in the evening, and lasted till next morning; after this it was fair till the 19th, when there was a slight shower of rain, and then it continued fair till the 21st, when it began to rain hard in the forenoon, and continued so to do till the 24th; during which time the weather was rather cool, the quicksilver in the thermometer never rising to above 64 in the warmest time of the day; but, after this rain, the weather became again warm, and continued so through the rest of the month. There fell at Waltham-abbey this month, according to the Almanac Journal, 3.515 inches of rain.

August

August.

The first fortnight of this month was remarkably dry and warm, with the wind at west, and there fell only a few very slight showers, till the 14th, when there was a very heavy rain which continued for six or eight hours, and refreshed the fields greatly, they being before parched and dry.—After this, the wind shifted to east, but the weather continued warm and pleasant, though the heat seldom raised the quicksilver in the thermometer to above 70, and from the 25th to the 31st, the air was cool in the nights.

This month was very dry, there being only one day in which there were any heavy showers. And according to the Almanac Journal, there fell only the depth of .10 or $\frac{1}{10}$ th of an inch of rain at Waltham-abbey.

September.

The first four days of this month were warm, and there fell a few refreshing showers of rain, with the wind at south-west; but on the 4th the wind shifted to east, and the weather became cooler—on the night, between the 5th and 6th, it was clear and star-

M 4

light,

light, and a hoar-frost in the morning.—On the 6th the wind changed to north-west, the air became warmer, and it rained in the night; it then became again cooler, and rained the following night. After this it continued fair till the 25th, but was cool, and sometimes frosty in the night, and early in the morning, with the wind mostly at north-east.—From the 25th to the end of the month, the weather was cool and variable; and there fell frequent showers of rain. The depth of rain which fell at Waltham-abbey this month, was 1.275 inches by the Almanac Journal.

October.

During the first fortnight in October, the air was warm and pleasant through the day, but often remarkably cool in the night, especially towards the morning, and there fell some few showers of rain; and the heath was often covered in the morning with a thick fog till eight, nine, and sometimes till ten o'clock. After the first fortnight, there was a good deal of rain which wetted the heath much, but it became again fair and pleasant for some days, though cool and often frosty in the night; and in the last week of this

this month it rained very hard, so as to render the heath extremely wet, slippery, and disagreeable; but the 31st it left off raining.

✓ By the Almanac Journal, the depth of rain which fell this month at Waltham-abbey in Essex, was only 1.915 inches, but on comparing my notes of the weather with the meteorological observations in that Almanac, 05/ I suspect that there fell more rain this month at Cox-heath than at Waltham-abbey.

November.

✓ It continued fair on the 1st, 2d, and 3d of this month.—On the 3d, the king reviewed the army; it was cool in the morning, and the heath was tolerably dry, and it continued fair all this day, but it rained very hard next morning, and rained more or less every day till the 9th, after which there was some pleasant weather.

✓ The third day after the review, which was the 6th, the troops began to move off the ground, and they were all gone by the 12th.

S E C T. III.

Of the health of the troops, and the numbers of sick at different periods ; and of deaths.

THIS summer and autumn were remarkable for being the most healthful and plentiful that had been in the south part of England for many years, which joined to the very particular care and attention of the honourable lieutenant-general Keppel who commanded at Cox-heath, in every article relative to the health and discipline of the troops, kept the men in such a good state of health as is scarce to be credited, but by those who were eye-witnesses to it.

Every one acquainted with armies must know, that surgeons of regiments in their daily returns of sick, put down not only those ill of fevers, and other acute and dangerous disorders, but also all those labouring under the slightest complaints, that the commanding officers may know the real state of the regiment ; hence the number of sick by their returns often appears very large in an army, though the number of what the generality of mankind would esteem real sick
may

may be but few.—This was the case with our army this year ; for in the beginning of July, when I was ordered by general Keppel to go round all the regimental hospitals, and to examine the state of the sick in them, and afterwards to examine along with the surgeons all those reported to be sick in camp, I found, that although by the regimental returns, the number reported to be sick in the army, amounted to between six and seven hundred, yet that the number of those ill of fevers, agues, fluxes, or other acute diseases, was but very few indeed, except in one battalion, the first of the royal or first regiment, who had thirty-three ill of intermitting complaints which they had brought from Chatham with them, and five of the dragoons who had been on coast duty.

From the middle of July, when all the regiments had come to their ground, to the 6th of November, the day the camp began to break up, the number returned sick daily to head-quarters ran from 610 to 777 present sick.—Before October, the highest number was 656.—The 1st of October they amounted to 721, and the 1st of November to 777, which was the highest number returned this year.

The

The absent sick returned was at first 105, and continued above 80 till the 22d of September, and after this decreased daily, so that in the last return they only amounted to 29.

On the 5th and 6th of July, the first time that I went round the regimental hospitals, the state of the sick in them stood thus :

There were but 34 men in the whole army ill of fevers, and who were all of them in a convalescent state.

Eight ill of aguish disorders, besides the 33 of the first battalion of the royal or first regiment already mentioned, and 5 of the dragoons.

Two ill of the confluent small-pox, and 12 of slight diarrhœas.

Six of rheumatisms.

The rest of those reported sick had slight rheumatisms, coughs, ophthalmias, swelled legs and feet from marching, sores, rupture, itch, some few the epilepsy, and a great many the venereal disorder.

It is the general received opinion that agues are frequent in every part of the county of Kent, and I expected to have seen many of the soldiers attacked with this disorder, particularly in autumn ; but was agreeably surprised to find that very few were afflicted with

with it, fewer indeed than one might have expected in what are reckoned the most healthy counties of England: and on enquiry I was informed, by the medical practitioners at Maidstone, that that town and the neighbourhood, and particularly Cox-heath, was as healthy and free from aguish complaints as most counties in England, only that the people who planted and gathered the hops in wet seasons were much afflicted with agues; but that the rest of the inhabitants were seldom attacked with them, which I believe to be true, from the observations I have made in the years 1778 and 1779.

Those who were attacked with agues on Cox-heath were soon cured by making some evacuations in the beginning, and afterwards taking the bark; but those agues which were brought from Chatham were many of them very obstinate.

The troops continued to enjoy good health through the month of July; a few only being taken with colds and slight feverish and pleuretic complaints, after the heavy rain from the 19th to the 22d; but these were soon relieved by bleeding, and the use of the antiphlogistic medicines, one or two only requiring to have blisters applied.

After

After this the camp continued extremely healthy till within four or five days of their breaking up ; at which time, from the cold wet weather, several began to complain of pleuritic and rheumatic, and inflammatory fevers, which they carried with them into quarters.

As a proof of the great health the men enjoyed, I shall just mention the number and state of the men in hospitals at one or two different periods, and then the number and diseases of those who died in hospitals from the time the troops came to Cox-heath till the time of their leaving it.

On the 29th of August, the whole number of men in hospitals was 265.

Of these

13 were ill of fevers, and of them only five who were bad and confined to bed.

30 ill of agues ; three of whom had contracted them on the heath ; and 25 of the first battalion of the first regiment who had brought the disorder with them from Chatham—and two of the dragoons who brought the agues to camp which they had got in doing coast duty.

2 ill of pleurisies.

5 of acute rheumatic disorders.

4 con-

4 consumptive.

1 ill of the hæmoptoe.

2 subject to epileptic fits.

1 was asthmatic.

206, the remainder, had venereal complaints; coughs, and slight rheumatisms, sore legs and ulcers, or were convalescents; by far the greater number of them were ill of the venereal disorder and sore legs.

The disorders of those reported ill in camp, whose numbers commonly amounted to between 3 and 400, were very slight or of the chronic kind—being mostly composed of those ill of claps, and other slight venereal complaints, itch, slight sores, slight rheumatic complaints, &c. and 27 ill of ruptures who had been enlisted without proper examination, in the hurry of bringing out the militia and recruiting the army, and 7 subject to epileptic complaints.

On the 9th of September.

The whole in hospitals amounted to 243; of whom

15 were ill of feverish disorders, 9 of whom were convalescents, 6 confined to bed.

23 ill of agues, 4 contracted in camp, 19 brought from Chatham.

4 rheu-

4 rheumatic, two of whom complained of violent pains in the back, which were suspected to be feigned.

2 complained of an incontinency of urine, and both were suspected of counterfeiting their disorders.

3 very much afflicted with epileptic fits.

The remaining 196 had venereal complaints, or slight sores, &c. or were convalescents.

October 14.

The whole in hospitals amounted to 225 ; of these

6 were ill of fevers, and of them 4 recovering.

6 ill of agues, 3 contracted in camp, 3 brought from Chatham.

3 ill of pains in the breast with fever.

4 ill of rheumatic complaints.

The remaining 206 were men with venereal complaints, sore legs, old ulcers, and chronic disorders, or convalescents.

I have mentioned these three particular times, the 29th of August—the 9th of September—and the 14th of October, more than any other, because I had in going round the regimental hospitals, marked down in my pocket-

pocket-book at each hospital, the number of sick the hospital contained, and the diseases they laboured under.

After the 26th of October, the troops did not enjoy that particular share of good health they had through the summer, for several, after the heavy rains, were taken with violent colds, and pleuritic and other inflammatory disorders, and pains of the breast, and with fevers, which they carried (as I before observed) with them into quarters.

Nineteen men only died in hospitals after my arrival in camp while the troops remained at Cox-heath; 6 died of the confluent small-pox, 1 of the 18th regiment—2 of the 65th—2 of the Essex M.—and 1 of the Hertfordshire M.

Six of consumptions they brought with them to the heath—1 of the 1st regiment—1 of the 59th—1 of the 65th—1 of the S. Lincoln M.—1 of the W. R. York M.—1 of the Surry M. The 1 of the Yorkshire M. died the third day after coming to the ground; and the 1 of the Surry militia, when very weak, fell and broke his arm, and died the third day after.

A man of the 59th regiment, subject to epileptic fits, was struck with a hemiplegia,

N

after

Seaths.

after a severe fit on the 9th of September, which carried him off in a few days.

A driver of the artillery, upwards of sixty years of age, in the first week of August, had a stroke of an apoplexy, by which he lost his sight, and about a fortnight after had another fit which carried him off.

A man of the Berkshire M. on the 31st of August was suddenly seized with a violent acute pain in his shoulder and breast, and died early next morning at three o'clock.

On the 30th of August, a man of the Surry M. died of an inflammation of his bowels, after being three days ill.

And a few days after a man of the Radnor militia, died on the fourth day, of a bilious fever.

In the second week of October another man of the Surry M. died of a flux, which had continued some weeks.

And on the 5th of November a man of the Cheshire M. died of a fever.

The number reported dead at Cox-heath camp in the returns given into the war-office, was larger than is here mentioned; for eight had been returned dead before the 5th of July, the first day I went round the regimental hospitals, and several of the regiments had left

oy left some sick behind them, and when the
 accounts of their death arrived, they were
 reported in the returns to head-quarters.
 And three men belonging to this camp died
 who were never carried to any hospital—
 one was drowned in the river in bathing—
 and the other drank a very large quantity of
 gin, and fell down and died immediately ;
 oy and a man of the artillery poisoned himself
 on the 8th of November, by taking a large
 quantity of corrosive sublimate.

d The whole number returned dead to head-
 quarters this year was 36 ; what was the *Deaths.*
 exact number of those who died out of camp
 I cannot say, because I do not know how
 many of those eight reported dead before I
 came to camp, died in the regimental hos-
 pitals at Cox-heath ; but eight of the other
 twenty-eight reported dead, died out of camp ;
 as I was informed by the surgeons of the re-
 giments upon enquiring where such and such
 men had died, whose names were mentioned
 in the returns given in to head-quarters, as I
 knew no such persons had died in the regi-
 mental hospitals at Cox-heath.

In the daily returns of this year, there
 were always two columns of sick, one of sick
 Or present, and the other of sick absent, and

the deaths of both were indiscriminately put into the dead column, so that I could not judge from looking over the returns which the honourable lieutenant general Keppel was so obliging as to allow me the perusal of, who had died in or out of camp.

One officer only died at Cox-heath this year, he belonged to the Hertfordshire militia, and was in the last stage of a deep consumption when he came to camp.

S E C T IV.

General remarks on the diseases.

THIS year all the sick, except those ill of the small-pox, as I before mentioned, were taken care of by the surgeons of the different regiments in their own regimental hospitals.—And the surgeons sent returns to me from time to time, of their sick, and I went round frequently to see them, and likewise occasionally to visit any of the men who were judged to be in a dangerous way, when sent for by the surgeons.

In the beginning of July a confluent small-pox began to make its appearance in some of the regimental hospitals, and immediately

an

an hospital was ordered to be fitted up at a small distance from camp on the right, for the reception of such men as should be taken with this disorder, in order to prevent its spreading among the troops.

Before this hospital was fitted up, and proper for the reception of sick, seven had been taken ill of the confluent small-pox, and four of them died in their respective regimental hospitals.

The small-pox had first made its appearance in the end of May in the village of Loose, which is half a mile from camp in the road to Maidstone, some time before the arrival of the troops in camp, and a number of children in that village had had it.

After the hospital was opened for the reception of patients ill of the small-pox on the 26th of July, only eight soldiers and three children were taken with the disorder; six of whom had the confluent kind, and two died.

One of the children was but two years of age, and at the time the small-pox attacked her, was very ill of a tertian ague, which had reduced her very much. As the ague weakened her daily more and more, glysters of decoction of bark, containing a drachm

of the powder, were thrown up two or three times a day at the time of the eruption of the small-pox, which came out but few in number, of a large distinct kind, and her ague was perfectly removed in four or five days; and before the small-pox was over, she began to recover her health and strength.

The fevers we had in July, and while the weather continued hot, were rather of a low kind, and did not bear the free use of the lancet; the blood was commonly of a loose texture, and a second bleeding was often observed to lower them much—but vomiting early in the disorder with a weak solution of emetic tartar, and giving a dose of salts, or of some other mild purge to clear the bowels, was of the greatest service; and, after some days, the bark proved a good cordial.

Towards the end of September, and through October, the feverish disorders became more of an inflammatory kind, and required a freer use of the lancet, and to be treated in the antiphlogistic method.

The intermitting and agueish disorders contracted on Cox-heath, were commonly soon cured, but those brought from Chatham and the Sussex coast, as I before observed, remained long obstinate, however, most of them

them got well at Cox-heath. Those whose constitutions were much relaxed, got well, by adding some spices and aromatics, particularly ginger, to the bark.—The calamus aromaticus in powder, given the length of a scruple, two or three times a day, was of use to some; others, whose legs were swelled, received benefit from taking some doses of Mercurius dulcis, and then a dose or two of physic, and after it taking the bark freely mixed with aromatics—and rubbing well their legs and arms with flannel, morning and evening. And emetics were of use to others.

Several complained of agueish head-achs, which returned periodically every other day. —These all got well by bleeding—emetics, and the bark; one only remained obstinate for some time, and required likewise the use of blisters and cooling remedies.

A few through the summer had the ulcerated sore throat, but these all got soon well, by the frequent use of gargles, and taking gentle cordial medicines with the bark, and the use of diluting acidulous liquors—some few who were very low were allowed half a pint of red wine in the day for a few days, while the disorder was at its height.

CHAP. II.

Of the Encampment at Cox-heath in the Year 1779.

S E C T. I.

The regiments which composed the camp.

IN the year 1779, an equal number of regiments of infantry, and the same number of artillery as the preceding year, but no cavalry, were ordered to form a camp at Cox-heath, under the command of lieutenant-general Pierſon.

The camp fronted to the ſouth as laſt year, but was thrown farther back from the hedges in front, in order to enlarge the parade; and the artillery with the three ſmall corps attending them, inſtead of being in the rear, were encamped on the right of the line near to the hedges.

The regiments which compoſed this camp were the following.

Right wing.

The 6th—69th—and 50th regiments—the E. Devon M.—E. Suffolk M.—Monmouth M.—Northampton M.—Buckingham M.—Norfolk M.

Left

Left wing.

Somerſet M.—Dorſet M.—Warwick M.
E. York M.—N. York M.—N. Glouceſter
M.—14th Reg.—N. Lincoln M.—65 Reg.

On right of all.

Artillery, with park—Rutland M.—An-
gleſea M.—and Carnarvon M.

On the 14th of June, 7 battalions came
to their ground, and the camp was com-
pleted by the 15th of July.—It began to
break up the 22d of November, and the laſt
regiments left the ground on the 29th.

S E C T. II.

*An account of the weather during the time of
the encampment.*

THE ſummer was hot, but there fell a
good deal more rain than laſt year.—
September and October were not near ſo
cold.—The beginning of November was
mild and pleaſant, but from the 14th it was
cold, and there was froſt and ſnow.

June

June.

From the time the troops began to come to the ground on the 14th, it continued fair and warm till the 21st; the quicksilver in the thermometer * never falling to below 60, nor rising to above 70;—on the 19th in the evening, it became very cold, with the wind at N. E. and froze in the night.—On the morning of the 20th, the wind shifted to W. and it became again mild and warm.—On the 21st it began to rain, and there fell some heavy showers every day, for the five following days, which wetted the ground very much; during that time the thermometer, at two o'clock was from 60 to 63.—The 26th, the wind shifted to S. and it cleared up and became milder, and continued so till the end of the month; the thermometer being at two o'clock, from 64 to 66.

The depth of rain which fell this month at Waltham-abbey, according to the Almanac Journal was 4.08 inches.

* N. B. Wherever it is said in the account of the weather, that the quicksilver in the thermometer rose to such and such a height, without mentioning at what time of the day the observation was made, it is always to be understood to be at two o'clock in the afternoon.

July

July.

The 1st and 2d of this month were fair, pleasant, mild days, the quicksilver in the thermometer rising to 70 at two o'clock.— On the 3d, it rained all the day till 6 in the evening, and rained much every day till the 9th; with the wind varying from S. W. to N. W. and at two o'clock the thermometer was never under 59, nor above 63.—The 9th and 10th were fine fair days, and the thermometer at 70.—The 11th became very hot, with little or no wind, the thermometer at two had rose to 75, and at seven in the evening to 78; from the great heat at four o'clock, I had reason to believe it had then rose higher, but being otherwise engaged, I did not examine the thermometer at that time; but sir William Bishop afterwards informed me, that that afternoon the quicksilver in his thermometer at Maidstone had rose to 82;—from the 11th to the 19th it continued fair, and was very hot weather, the thermometer rising every day to 76, 77, and 78; and sir William Bishop, and Mr. Warn, surgeon to the Dorset militia, informed me, that the quicksilver in their thermometers had rose to 80 and 81, during that time;

time; on the 19th, there were some claps of thunder, and some showers of rain in the afternoon, between four and five o'clock, but it cleared up at five o'clock, and continued fair next day.—On the 21st it thundered between ten and eleven o'clock in the morning, and rained hard till eight o'clock in the evening; and there fell some heavy showers both in the night and through the day till the 24th, during which time the wind was at S. W. and N. W. and the thermometer from 60 to 63, at two o'clock.—On the 24th it was fair, and the thermometer at 68.—On the 25th and 26th, there were heavy showers, a good deal of thunder and lightning; and the thermometer at 65 and 66.—The 27th, 28th, and 29th, were fine fair days, with a gentle breeze at S. W. and thermometer at 69.—On the 30th, it thundered at seven o'clock in the morning, and there fell some heavy showers of rain, with the wind at S. E. but it became fair by nine o'clock, and at two the thermometer was up at 72.—The 31st was a fine day; there fell some slight showers of rain between twelve and one o'clock, and the thermometer at two was at 71.

There

There fell at Waltham-abbey, during this month, the depth of 6.43 inches of rain.

August.

The 1st was a fine fair day with the wind at S. E. and the thermometer at 72.—The 2d the same, except that it rained for an hour, from nine to ten in the morning.—The 3d and 4th were fair, with the thermometer at 71. On the 5th it rained very early in the morning, but was afterwards fair with the wind at W. S. W. thermometer at 70.—The 6th was cloudy, threatening rain in the morning; at two o'clock it began to rain hard, and continued raining till twelve, and afterwards in the night; the thermometer was at 64.—The 7th, it was fair at eight in the morning, but the ground was very wet; it kept fair all day, with the wind at S. W. and thermometer at 66.—The 8th, a fine sunshine day, and the thermometer at 70.—The ninth, some showers very early in the morning with the wind at N. N. E. and thermometer at 69. The 10th, a fine day, wind N. W. thermometer 73.—The 11th, the same.—The 12th, a fair day, with a breeze at W. N. W. till seven in the evening, when there fell a heavy shower of rain, which
lasted

lasted for an hour, with wind S. E. thermometer 74.—The 13th and 14th, fair with little or no wind, thermometer at 74, and 73.—On the 15th, there fell some slight showers of rain very early in the morning, afterwards it was a fine warm day; thermometer at 72.—The 16th was fair, with a breeze at S. E. and thermometer 73.—The 17th, the same, with the thermometer at 76.—After this to the end of the month there was fine warm fair weather, with the wind constantly at some point to the east, varying from S. S. E. to N. N. E. and the thermometer was every day at two o'clock from 73 to 78, and the quicksilver kept up in the nights from 66 to 70. And there fell such heavy dews in the evening and through the nights, that the mens tents, the ground, and the woods, were so wet every morning till eight, nine, or ten o'clock, as if some showers of rain had fallen in the night; and the grass, bushes, and underwood, in the woods, continued wet and damp through the four and twenty hours.

N. B. The depth of rain which fell at Waltham-abbey this month, according to the Almanac Journal, was near one inch $\frac{9}{16}$.

September.

The 1st of September was a very hot day with little wind; and the thermometer at two rose to 76. In the afternoon the wind chopped about to south, and there was a smart shower which began at nine o'clock, and lasted for an hour which cooled the air.—The 2d was fair, with a gentle breeze at S. W. and thermometer at 68.—3d fair, the thermometer at 70.—On the 4th, there were a great many smart showers fell through the day with wind at W. S. W. and therm. 67.—On the 5th, a cloudy morning, and after two o'clock, several very heavy showers fell between that and next morning; thermometer 64.—The 6th and 7th fair, with a brisk wind at S. W. and thermometer at 62 and 64.—The 8th, fair till nine in the evening, after which there fell some heavy showers before morning with a brisk wind at W. S. W. thermometer 70.—The 9th fair, thermometer 64.—On the 10th, there was a very thick fog in the morning, which continued till nine, when there was a slight shower of rain, after which it was fair, the thermometer 64, the wind from W. S. W. shifted to E.—The 11th, a fine clear day with
little

little wind, thermometer 68.—The 12th, fair, little wind at West in morning, S. E. in the evening, thermometer 65.—13th fair, thermometer 66. wind W. N. W.—On the 14th, some slight showers through the day, wind S. E. thermometer 68.—The 15th, 16th, and 17th were fair, with a brisk wind from S. and S. W. and the thermometer at two from 68 to 70.—On the 18th, a brisk wind at S. W. thermometer at 66; and at four o'clock in the afternoon, a very heavy shower of hail, and afterwards frequent showers of rain till some time early next morning.—The 19th and 20th, fair with a brisk wind at S. W. felt cool, thermometer at 58 and 60; and at twelve at night, on the 20th, the quicksilver came down to 44.—The 21st, 22d, and 23d, frequent showers in the day, and likewise in the night, with wind mostly at S. W. thermometer 64, 64, and 62.—On the 24th, very early in the morning, there was a great deal of thunder and lightning, and heavy rain; but it cleared up by eight o'clock, and was afterwards a fine sunshine-day, with wind at S. W. thermometer 66.—On the 25th, it rained early in the morning, and there fell several very heavy showers through the day, and after
eight

eight o'clock at night ; a brisk wind at S. S. E. thermometer 68.—On the 26th, some showers had fallen early in the morning, was a fine sunshine day, with wind at S. E. and thermometer at 72. At eight o'clock at night it began to thunder, and from thence to twelve there was a great deal of thunder and lightning, and very heavy showers of rain. On the 27th, there fell some showers of rain very early in the morning, but it turned out a fair day with wind at S. W. thermometer at 66 ; at ten o'clock at night, there fell a very heavy shower of rain, and afterwards several in the course of the night. On the 28th, there were some slight showers of rain, thermometer at 62, wind S.—The 29th, was a fair mild day, with a gentle breeze at S. E. and thermometer 66.—30th, a fine pleasant day, with wind at S. and thermometer 66 ; and at three in the afternoon there fell some showers of rain.

The depth of rain fallen at Waltham-abbey this month was $4\frac{23}{100}$ inches, according to the Almanac Journal.

October.

On the 1st there was a slight shower of rain in the morning, and it was afterwards

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fair

fair but cool, and continued so till the 5th; the thermometer on the 1st and 2d was at 59, and on the 3d, 4th, and 5th, at 54; and fell in the night to 46 and 44; and there was a fog on the heath early in the mornings, as there was frequently, during the course of this month, which wetted the men's tents very much; on the 5th, there was a smart shower of rain at two o'clock.—The 6th fair, but little sunshine, thermometer 59, wind E.—On the 7th, some showers of rain, thermometer at two at 59, but at twelve at night sunk down to 42.—The 8th and 9th, fair with little wind, on the 8th, wind at N. and on the 9th shifted to E. S. E. thermometer on 8th at 57, and sunk at eleven at night to 39; on the 9th at 62.—The 10th, 11th, and 12th, wind at W. S. W. rained more or less every day, thermometer on 10th and 11th at 58, on 12th at 62.—The 13th, mild and fair in the day, but rained at night, thermometer 64.—The 14th was a mild pleasant day, with wind at E. S. E. and thermometer at 64.—The 15th, a pleasant morning, some showers of rain from two to four, thermometer 58, wind S. S. E.—The 16th was a very rainy day, with a strong wind at S. W. thermometer 56.
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—The 17th, a sunshine day, only a slight shower at one o'clock, thermometer at 60. wind W. S. W.—On the 18th, a rainy morning, cleared up at eleven, thermometer 64.—The 19th, a pleasant mild day with a brisk breeze at S. S. W.—thermometer at 64; several showers after four o'clock afternoon, and afterwards in the night.—20th fair, thermometer at 60.—The 21st, a clear, fair morning, but began to rain at two o'clock, and afterwards there fell frequent showers till next morning, thermometer at seven in the morning was at 44, but rose by two to 56. The 22d was fair; wind at N. N. E. thermometer 60.—The 23d, a mild fair day, wind S. W. thermometer 61.—24th, a very thick fog in the morning, which did not dissipel till twelve o'clock, noon; kept fair all day, thermometer 60.—The 25th, a clear pleasant day, wind E. S. E. thermometer 63. The 26th was a mild pleasant day, it rained for half an hour between two and three, thermometer at 62. The 27th, it began to rain very early in the morning, and continued to rain till noon, after this was fair, thermometer 56, with a strong wind at N. W.—The 28th was a rainy day, with a strong wind at W. S. W. thermometer 58.—The

29th, a fine fair day with wind at W. thermometer 54.—The 30th, a fine pleasant dry day, thermometer 62.—The 31st, a fine fair calm day, with wind at W. thermometer at 58. From the 12th to the 31st, the nights were warmer than in the beginning of the month; and the thermometer at twelve at night was commonly at 51, 52, and 54, and once or twice only at 48.

November.

The 1st of this month was a mild, fair, day, with little wind at S. S. E. thermometer at two at 60, but it turned cool at night and sunk to 38, at twelve o'clock.—On the 2d, was a drizzling rain early in the morning, afterwards a fair calm day, thermometer at 59.—3d, there was a thick fog this morning, and it felt cold, and continued so through the forenoon, thermometer 48, wind W. S. W. The 4th was a mild, pleasant day, with a breeze at W. S. W. thermometer 58.—On the 5th it rained a little, very early in the morning, and some slight showers in the forenoon, otherways was mild and pleasant; wind at W. S. W. and thermometer at 58.—The 6th, a pleasant fair day, wind at W. thermometer at 54. The 7th,
a fine

a fine fair calm day, thermometer 60, wind W. S. W. there fell a gentle shower at seven in the evening.—The 8th, a fair morning, thermometer 54. After nine in the evening, there fell several heavy showers of rain. The 9th was fair all day, thermometer at 53, wind W. N. W. began to blow and rain hard at eleven at night, and continued to do so till next morning. The 10th, a fair calm day but cold, wind shifted from N. W. to N. and N. E. thermometer at 46.—The 11th was cool; and there fell frequent slight showers from ten in the morning till three in the afternoon, after which it continued fair, thermometer 46 at two o'clock, and at 38 at twelve at night. The 12th was showery, wind S. W. thermometer 50.—The 13th, fair till seven at night, wind W. N. W. thermometer 47; after seven o'clock it rained hard till three or four next morning, with a very high wind. The 14th, a cold fair morning, thermometer at nine o'clock at 36, and it snowed at twelve, and continued snowing till two, wind N. W. had froze in the night, ice having been found on a pail of water, thermometer at two at 38, wind shifted to W. N. W. —On the 15th, it snowed a good deal thro' the day, with wind at S. E. thermometer

at 38 ; it began raining between eleven and twelve at night, became milder, and thermometer rose to 40 ; but afterwards froze in the night. On the 16th, cool in the morning, with ice on the little pools of water ; little or no wind at N. W. thermometer 40. —On the 17th, had froze in the night ; was a calm fair day, but cold, wind N. W. thermometer at nine in the morning at 36 ; at two at 43, at eight at night at 34. —On the 18th, a very thick fog till ten o'clock in the morning, a hoar-frost on the hedges and trees, and the thermometer at 36 at nine o'clock in the morning ; and it snowed a little at ten, afterwards was fair, wind N. W. thermometer at two o'clock at 41. —On the 19th, a clear sunshine morning and hard frost ; the grass and trees white, and the road and garden hard for the first time this season, thermometer at ten o'clock at 32, and at two o'clock at 40, wind W. N. W. —On the 20th, a calm grey morning, a hoar-frost, but the ground soft, at nine the thermometer at 34, at two o'clock at 40, snowed a little at five, and then rained till nine, wind W. N. W. —21st, had rained in the night, and the ground very wet at nine, and the thermometer at 40 ; it snowed at eleven, and rained
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from one to seven o'clock, then clear moonshine, and thermometer at eleven at 38.—The 22d was a fair but foggy morning, with wind at W. N. W. and thermometer 38 at nine, and at 40 at two o'clock; at one sunshine, and it continued fair all day. This day the troops began to move off the ground.

The 23d, a hard frost and a fog on the heath in the morning, and a total eclipse of the moon at eight at night.—The 24th, frost in the morning, soft and mild in the middle of the day; thermometer 40, and frost again at eleven at night. The 25th, rained early in the morning, and after two o'clock very heavy showers with a very high wind, thermometer at 42. On the 26th, blew very hard in the morning, with wind N. W. and slight showers from time to time; felt cold, thermometer at 34; and it began to freeze in the afternoon.—On the 27th, a very hard frost at five o'clock in the morning; but began to thaw at ten, and rained much through the day. The 28th was a mild day, and the last of the regiments left the ground the morning of the 29th. *(1st November)*

S E C T. III.

Of the health of the troops and the number of sick at different periods.

THE troops continued remarkably healthy during the months of June, July, and August, for before the first of September three only had died of fevers, and none of other disorders, except the small-pox; indeed, on the 31st of July I was called by the surgeon of the N. Yorkshire M. to see three men ill of the petechial fever in his regimental hospital, who all got well by emptying the stomach and bowels, and then using the mild cordial diaphoretic medicines, and the bark; and the disorder did not spread. Excepting these, and three or four men during the time of the epidemical fever of September and October, I did not see any with symptoms of this fever during the encampment of this year.

We may judge of the great health the troops enjoyed before September from the return given in to me by the surgeons of the regiments on the 24th of August, of all the men unfit to march with the army, at the
time

time the French fleet were off Plymouth, and it was expected that the army would move.

The whole number amounted to 251. Of these 136 were reported proper to be in hospitals; 115 to be sent to billet.

The diseases those for hospitals laboured under were as follows—10 fevers—16 rheumatisms—7 consumptions—1 ague—1 ulcerated sore throat—1 dysentery—1 gravel—1 dropfy—2 ophthalmia—17 wounds, ulcers, and sore legs—35 small-pox—49 venereal.

None of those were in a dangerous state except the consumptive and dropfical, and those ill of small-pox; for those ill of fevers were mostly in a convalescent state, and they all got well soon, as did the others labouring under other disorders.

The 115 reported for billet were either weak men recovered from fevers, or men who had sore legs, or ulcers, or slight venereal complaints, or men wore out and unfit for service.

From the time all the regiments had come to camp in July to the 15th of August, the number of sick returned daily by the regimental surgeons was between 7 and 800, and afterwards as follows. On the 16th of August

gust the number amounted to 766—The 1st of September to 835. The 15th to 928—The 1st of October to 1020.—The 15th, to 933.—The 1st of November to 920.—The 19th to 787. On the 22d, the regiments began to leave camp—In the last week of November, the Buckinghamshire M. reported 10, and the Northamptonshire M. 24 taken ill of fevers, who were left behind with the general hospital.

S E C T. IV.

Of the low autumnal fever of September and October.

ABOUT a week after the return of the 24th of August was made, some of the surgeons on the left told me, that some of their men began to complain of a low, feverish disorder, which from the mildness of the symptoms they made light of, believing it to be only a little feverish disorder from fatigue; not apprehending it to be what it afterwards proved, a low dangerous bilious fever.

From the first of September, the number taken ill of this fever increased daily among the men of the four regiments on the left.

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The N. Gloucester M.—the 14th R.—the N. Lincoln M.—and the 65th R.—And on the 10th, from the number taken ill, there was a general alarm lest it should spread through the whole camp; many officers of rank having received accounts from their friends that a very dangerous fever, which carried off great numbers, was then epidemical in many parts of England.

On the 12th, the numbers ill of this fever in the four above mentioned regiments were as follows—Of the 14th R. 22 bad in hospital, and 20 in camp, who had it in a slighter degree—Of the 65th R. 20 bad in hospital, and 19 feverish in camp.—Of the N. Gloucester, 18 bad in hospital, and 17 in camp.—Of the N. Lincoln, 40 bad in hospital and tents, and 49 in camp, who had it in a slighter degree.

So that in these four regiments, there were on the 12th of September, 205 ill of fevers, besides about 50 more in the rest of the line.

About this time the 6th and 69th regiments on the right, began to be attacked in the same manner as the four on the left, and by the 23d of the month, the one had 16 and the other 17 men very ill of fevers in
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hospital, and as many more in camp, who had the fever in a milder degree; and by this time many of the regiments had three, four, five, or six, in their hospitals.

On the 24th of September, there were 163 ill of fevers in hospitals; and near an equal number of men with feverish complaints, and men recovering from fevers in camp. And the numbers of fevers increased daily till the first week in October, and from thence gradually declined till the 19th of November, and again increased a few in some of the regiments in the last week they remained on the ground.

How many men in all had this fever at Cox-heath I cannot say precisely, as the regimental surgeons did not mark particularly in their returns to me, the succession of men who were admitted and discharged from their respective regimental hospitals; but from the best information I could get, and by visiting the hospitals, I believe that the whole number amounted near to 800 men; and of these 38 died before the 22d of November, the day the first regiments left their ground to go into winter quarters.

On the breaking out of this fever among the regiments in the left, lieutenant-general
Pierston,

Pierſon, with his uſual humanity, exerted himſelf in a particular manner ; taking every ſtep poſſible to prevent its ſpreading, and for the relief of thoſe already taken ill.—The four regiments, among whom it began were ordered to ſhift their ground, and to encamp at ſome little diſtance, and their dirty ſtraw to be burnt ; and it was recommended to the officers to pay the ſtricteſt attention in ſeeing that the camp was kept clean, and the ſoldiers were very regular and kept themſelves ſober, and that they ſtruck and aired their tents as often as the weather would permit ; and to look particularly into their meſſing, and to ſee that their victuals were wholeſome and good of their kind.

As the hospitals of the regiments where this fever began were too much crowded, another ſmall general hospital, (the only place that could be got at that time) was fitted up, and on the 16th of September 24 men ill of fevers were drawn from the regimental hospitals that were too full, and put into it ; and at the ſame time 20 of the worſt venereal patients, who had had the ſmall-pox were removed to the general hospital for ſmall-pox, there being accidentally twenty-two beds empty there at the time ; and three
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hospital mates were sent from town to assist in taking care of the sick in the general hospital. By these means the regimental hospitals, which were before too full were thinned, and the sick drawn from them properly taken care of.

Fever.

What was the particular cause of this fever I cannot say; for whether it was owing to any particular constitution of the air, an epidemical fever being then frequent in the neighbourhood of camp, and in several other counties of England and in Holland; or whether it was occasioned by the men stealing out of camp and going into the damp woods to gather nuts, and eating large quantities of them; or whether it was owing to other causes I shall not take upon me to determine.

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This fever appeared to me to be of the low bilious autumnal kind; it began commonly with a lowness and dejection of spirits, a white tongue, and a low quick pulse, without any violent symptoms; and for the most part the sick complained of a squeamishness, or nausea, a slight pain in the head, and some had a purging. In general, for the two or three first days, those ill of this fever seemed not very sick, and yet far from being well:

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Symptoms.

well: some, however, were attacked at the first with more violent symptoms; they complained of a pain in the head, attended with sickness and vomiting, and the pulse was full, quick, and hard; and some had a griping and purging. Most of those who were taken ill in the three first weeks of September, complained more or less of sickness in the beginning; and on taking a vomit of the antimonial kind, threw up large quantities of green bilious stuff. Almost all of them had an exacerbation of fever at night, and became cooler towards morning, and continued so through the day; yet, though it was the autumnal season, yet very few of these fevers terminated in regular agues.

After some days the tongue, which in the beginning was white and moist, became brown and dry, the countenance looked heavy and dejected, and the sick complained of great debility and faintness, and were often attacked with a delirium, which seldom rose to a high degree; the sick kept muttering to themselves, but on being spoke to, would presently recollect themselves and give distinct answers, though they soon after fell a-speaking and muttering as before.

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As the disease advanced, the tongue became more and more parched and dry, the delirium continued, their strength failed them, and they wasted to an amazing degree, and became often so weak as not to be able to turn themselves in bed. At last, where it ended fatally, a twitching of the tendons, and often a hiccup came on, the pulse sunk, the extremities turned cold, and they were either carried off by convulsions, or fell into a comatose state, in which they remained till they died.

Termination.

In some few the symptoms approached to those of the petechial fever, and in three or four, I observed eruptions resembling petechiæ.

Duration.

This fever, if it did not go off in eight or ten days, generally run out to some length; in many to four or five weeks, and in some to six, or seven, or more; few died before the 17th or 18th day.

The loss of strength and lowness, which often attended this fever after the 15th or 16th day, was greater and more universal than common.

The patients who died of this fever were mostly emaciated to a great degree, like those who

who die of deep consumptions; and I believe, that several of them had had abscesses formed in some of the viscera, without any acute pain, or other previous symptom of inflammation in the part, in the same manner as happens often in the putrid petechial fever; for in some few the original fever seemed to go away, and be succeeded with a hectic fever which wasted them gradually, till death put an end to their sufferings.—There was no convenient places either at the regimental or general hospitals for opening of dead bodies. The body of one man only was opened at the general hospital, who had been sent from one of the regimental hospitals in the hectic state above described; a few days before he died, he complained of a tension and pain of his bowels and costiveness, which were relieved by fomentations, and the use of opening medicines, but he died soon after. On opening his body, a great quantity of matter was found in the cavity of the abdomen, so fetid and offensive, that the surgeon could not go on with the examination of the body, to see which of the viscera had been diseased.

On the first appearance of this fever, I advised the regimental surgeons to clear the sto-

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mach

Emetics. mach and bowels by means of an antimonial vomit, and a dose of some gentle physic at the very beginning of the fever; and in general those men who applied to their surgeons on the very first attack of fever, and were treated in this way, had the fever in a much milder degree than others.

The mildness of the symptoms for the first two or three days of the fever, deceived many men, and made them neglect themselves, and attempt to struggle with the disorder till they could hold up no longer; these men did not fare so well as those who applied early for relief; for after the first five or six days, the emetic and purge, though they were of use, yet did not produce these remarkable good effects at this time as when taken very early in the disorder.

Where the pulse was full and strong in the beginning, the taking away some ounces of blood was of service, but it was not often necessary to repeat this evacuation, unless where some particular symptom required it; the blood was seldom fizy, though in some few it was so.

After evacuations it was commonly found best to follow the cooling method for some days; and where the pulse was low, to add some

some of the mild cordials; and the mild antimonial medicines, given in repeated small doses along with the gentle cordials had a good effect in some cases.

But after some days when the pulse became low which it commonly did, it was necessary to follow a more cordial regimen, and to give the *confectio cardiaca*, or other cordial medicines, with the saline juleps, and to allow the patient more or less wine, and to apply blisters; and commonly after some time the bark joined to camphor, cordials, and wine, proved the best remedies of any.

In the course of the disorder, it was frequently necessary to repeat the emetic and laxative medicine, when the patients complained of sickness, and of griping in the bowels; and if they were attacked with a purging, which they frequently were, it was found of advantage to give 15 or 20 grains of *ipecacoanha* in the evening, and next morning a dose of rhubarb, and after its operation to give some of the chalk julep, with *confectio cardiaca*, or mild opiates and astringents, to moderate the discharge by stool when too great. And if at any time a kindly warm sweat appeared on the skin, it was of the greatest service to promote it by means of

the mild diaphoretics and warm drinks, for such sweats often carried off the fever.

S E C T. V.

General remarks on other diseases which appeared among the troops this year.

THIS year we had but few agues, and these after some previous evacuations yielded readily to the bark.

Some few had periodical head-achs which yielded commonly to the bark; but it had not the desired effect on two patients, who complained of a pain on the back part of the crown of the head, which returned every day, though not at regular stated times; the one said the pain was confined to two spots on the back of the head, about the size of a shilling, and the other to one spot.

The first had a rash, which came out in form of red pimples, all over the face and most of the body along with the head-ach; after some evacuations, the pain was removed for some time by the use of the bark; but it returned, and the bark, valerian, and other remedies that were tried had no effect, till he was ordered an emetic of an ounce of
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the ipecacoanha wine, with two drachms of the vinum antimoniale; this operated briskly, and like a charm, as the patient himself expressed it; it removed his head-ach instantaneously, and the rash went off in a few days afterwards.

The complaint of the other was at first relieved by some evacuations and the use of the bark, but in a few days became more violent, attended with great sickness. It was at last cured by the use of two emetics, and some doses of brisk physic, which brought away a large quantity of bile.

Several had the ulcerated fore throat, who all got well by following the method of cure to be hereafter mentioned.

Very few had the dysentery; and these recovered by the use of some well-timed opening medicines in the beginning, and taking some mild opiates. I did not see any who had this disorder in a violent degree.

Seventy-six had the small-pox this season. Of these 24 had the distinct kind; 49 the confluent; and 3 the petechial. All those with the distinct kind recovered; 11 of those with the confluent died; of these 1 died in his own regimental hospital, another five hours after being brought to the general hospital

for small-pox ; and three of mortifications in the private parts, which came on the 18th, the 20th, and 22d days of the disorder : they began with a redness and swelling of the scrotum and penis, as if an abscess was going to be formed in these parts, but the second or third day they had all the marks of a true gangrene ; which the bark, with wine and opiates, and warm dressings had no effect in putting a stop to ; they all three died within five days of the first appearance of the red swelling of the scrotum. The three with the malignant or petechial kind, had all of them hæmorrhages from the different emunctories come on before the 6th day, and they all three died before the 9th.

Nothing particular occurred among the rheumatic, the venereal, or consumptive cases.

S E C T. VI.

Of the number of men who were left and died in hospitals in the year 1779.

FROM the fever that appeared among the troops in September, and from their continuing longer in camp this year than last, there was a greater number of sick at the
time.

time the troops went into winter quarters than last year; and 78 men were obliged to be left in hospitals at the village of Loose, under the care of Dr. Gloster and two other mates. —Of these 78, fifty-two were ill of fevers —1 of the ulcerated fore-throat—2 of the rheumatism—1 of a dysentery—1 of the jaundice—1 of a psoas abscess—1 of a bruise, and consequent large abscess in the thigh—3 of bad sores—1 of a fractured leg.

The number of private men who died of diseases in hospitals this year at Cox-heath, from the 14th of June, the day that the troops began to come on Cox-heath, to the 22d of November the day they began to leave it, was 63, besides three who were killed by accidents; 1 of whom was drowned in bathing, 1 shot by accident, and the 3d killed by an unlucky blow in a quarrel.

Of the 63 who died of diseases—41 died of fevers—14 of the small-pox—1 of the dropsey—1 of convulsions—5 of consumptions—1 of a psoas abscess—and 1 of a mortification.

Besides the 66 privates, 3 officers died this year. On Saturday the 28th of August, there was a launch of a 74 gun ship at Chatham, and several officers went over to see it;

amongst others an officer of the Somerset M. and another of the N. Lincoln M. The day was extremely hot, the quicksilver in the thermometer rising at one o'clock of the day to 78, and not a breath of wind; both these gentlemen had been extremely heated on the road, and drank cold liquors on their arrival at Chatham, and went immediately and stood in the dock-yard to see the launch. They were both taken ill on their return to camp that evening. 1. The officer of the Somerset died the Wednesday following, and I did not see him till a few hours before his death, when he was already lying in a stupor, and universally convulsed. I was told that he had had a fever, in which he complained much of his throat. 2. The officer of the N. Lincoln I saw the Tuesday after the launch; he had then a violent fever, his pulse was full, and beat 120 strokes in the minute, but the blood that had been taken from him about an hour before I saw him was not fizy. After taking a puke, and an opening julep, and some cooling medicines, his pulse came down to 84, and he seemed every way better; but on the 7th day his pulse became as quick as ever, his tongue parched and dry, and a delirium came on, and he died the 12th day

from

from the time of his being at the launch. The surgeon of the regiment had attended him before I saw him, and Dr. Milner, of Maidstone, saw him with me a day or two before he died.

3. The third was an officer of the Buckinghamshire M. who on being taken ill of a fever in the end of October, or beginning of November left camp, and went to a friend's house some miles off, and I did not see him.

S E C T. VII.

Of the number of people who died in the town of Maidstone during the time of the encampments in the years 1778 and 1779.

IN the time the troops were encamped at Coxheath, in the years 1778 and 1779, there died in the town of Maidstone, which is supposed to contain between 5 and 6000 inhabitants, the following number of people.

1778.		
In June	—	13
In July	—	11
In August	—	13 ✓
In September	—	18 ✓
In October	—	10
In November	—	6
Total		<u>71</u>

1779.		
In June	—	15
In July	—	11
In August	—	14 ✓
In September	—	19 ✓
In October	—	16
In November	—	8
Total		<u>83</u>

Of

Of the 71 who died in the year 1778, there were eleven whose ages were from 60 to 88, and 19 children under ten years of age.

And of the 83 who died in 1779, there were 12 whose ages were from 60 to 88; and 33 children under 10 years of age.

PART IV.

OBSERVATIONS

ON THE

DISEASES

INCIDENT TO

SOLDIERS IN THE TIME OF SERVICE,

AND ON

The same Diseases as they have appeared in LONDON.

CHAP. I.

Observations on putrid and petechial Fevers.

SECT. I.

Of the causes of putrid fevers.

PUTRID malignant fevers, attended with eruptions, are taken notice of by Hippocrates *, and other ancient authors †; but it is uncertain whether they meant that par-

* Hippocrat. lib. ii. Popul. sect. 3. text. 2.

† Aetii Tetrab. ii. sect. 1. cap. 129.—Actuar. lib. i. cap. 23.

ticular

ticular sort of eruption which we now call petechiæ, as their descriptions are not clear enough to distinguish it from the miliary and other kinds.

Since the 14th century, we have had many accurate accounts of fevers of this kind, which have appeared in different parts of the world; from all which it is evident, that such fevers generally take their rise either from some antecèdent acrimony of the blood, or, what is more frequent, from some source of corruption or contagion; from the use of putrescent animal food, and a want of fresh vegetables and of acescent liquors; from the putrid steams of corrupted animal substances; from the moist putrid vapour of low marshy places in summer, where there is stagnating water, which corrupts by the heat; from the foul air of crouded hospitals, jails, and ships; and from such like causes as Mindererus, Diemerbroek, Portius, Ramazzini, Riverius, and others, who have wrote on putrid and camp diseases, have observed; and as is confirmed by daily experience.

When once fevers of this kind begin, they are observed to be of a contagious nature; and if proper care is not taken they affect those who attend the sick, or who live in the same

same room, and breathe the same air with them; and the more dirty the sick are kept, the smaller the rooms are, in which they lie, and the greater number of them is put together in the same place, the stronger and more virulent is the malignancy of the disorder, and the faster it spreads.

However, where there are only one or two people ill of this fever, I have observed that it is by no means so contagious, or so dangerous as is commonly imagined, provided the sick be kept clean in large airy apartments, and are properly taken care of; for a number of people ill of this fever are taken every year into St. George's hospital; few die of it, and it very seldom spreads so as to infect the other patients, or the nurses in attendance. And therefore, whenever a disorder of this kind begins to appear, the greatest care ought to be taken to have the sick kept extremely clean, in large well-aired apartments; and in hospitals the directions already mentioned ought to be strictly observed;—and it ought always to be remembered in armies, hospitals, and all places where a number of people live together, that nastiness, filth, and foul air, are productive of the worst of diseases, and that pure air, neatness, and cleanliness,

Contagion.

ness, are among the best preservatives of health.

Many authors have reckoned the malignant, the petechial, and the pestilential, to be distinct species of fevers; and have treated each of them under a particular head. But Riverius* has very justly observed, that they all belong to the same pestilential tribe, and only differ from one another in the degree of infection, and the violence of the symptoms†; and that they require the same general treatment, and the same medicines. And Mindererus‡, in speaking of the plague, spotted fevers, and the Hungarian distemper, observes, that “ though these three diseases
“ have their rise from one and the same cause,
“ putrefaction, and are to be cured by the
“ same remedies; yet is therein required the
“ discretion of a prudent physician, for the
“ ordering and prescribing of medicines ac-
“ cording to circumstances.”—The plague §

* River Prax. Med. lib. xvi. sect. 2. Præfat.

† Ibid. sect. 3.

‡ See English Translat. of Dr. Raymundus Mindererus's *Medicina Militaris*, ch. iv. p. 38, published at London, 1674.

§ Mr. John Woodal, surgeon of his majesty's hospital of St. Bartholomew's, and surgeon-general to the East-India Company, who was in London in the time of the plagues in 1625 and

certainly differs in many of its symptoms from the malignant fevers; yet from all the accounts we have of it in different parts of the world, it should seem frequently to have arose from causes entirely similar to those

and 1636, published in the year 1653, a Treatise on the Plague, and the Pestilential Fever, annexed to his book, entitled, The Surgeon's Mate, in which he gives the following account of the causes of this most terrible distemper. After mentioning it as a punishment inflicted on mankind for their sins; he adds, "The terrestrial causes thereof, are, by common consent of most writers as followeth: venemous and stinking vapours arising from fens, standing-ponds, or pooles, ditches, lakes, dunghils, finckes, channels, vaults, or the like; as also unclean slaughter-houses of beasts, dead car-kasses of men, as in time of warre, and of stinking fish, fowl, or any thing that hath contained life, and is putrid; as also more particularly in great cities, as in London, the unclean keeping of houses, lanes, alleys, and streets; from those recited, and the like infectious venemous vapors, by warineth of the sun exhaled, are apt and able to infect the living bodies of men, and thereby to produce the plague, which once produced, is too apt by infection to spread itselfe, and become popular, as experience too much sheweth." To which he adds, "a scarcity or want of food; and the use of what is unwholsome."

Not only the causes which produce these two disorders are frequently similar, but the diseases likewise themselves in many particulars; for whoever compares the following account of the petechial fever, with the description of the plague (as it appears at Constantinople) given in the Philosophical Transactions, Vol. LIV. art. xi. by the late worthy and ingenious Dr. Mackenzy, after thirty years residence at that place, will be convinced, that these two diseases belong to the same genus, and require, in many respects, nearly the same treatment.

which

which have produced the malignant fever ; and to have gained force, and to have spread in the same manner. And I make no doubt, but that many of those contagious disorders, which authors have described as plagues, were no other than the common petechial fever, heightened to a great degree of malignancy, by filth, nastiness, and want of proper care ; and a total ignorance or neglect of the means to prevent its spreading, after it had begun to appear.

Having mentioned these few things relative to these fevers, we shall next take a view of them as they appeared with us in Germany, and as they are observed daily here in Great Britain.

S E C T. II.

Of the hospitals and places where the petechial fever was observed.

IN autumn 1760, a malignant fever, and fluxes, began to appear among the soldiers, while the allied army remained encamped about Warbourg, from the first week in August till the beginning of December, when they went into cantonments. During that time, there had been a continued rain
for

for some months, and the camp and neighbouring fields, and villages, were not only filled with the excrements of such a numerous army, but likewise with infinite numbers of dead horses, and other dead animals, which had died in doing the necessary military duties, and in bringing forage, provisions, and other necessaries for the troops: besides this, the field where there had been an action on the 31st of July, and where many of the dead were scarce covered with earth, was in the neighbourhood of the camp.

Not only the soldiers, but the inhabitants of the country, who were reduced to the greatest misery and want, were infected with the malignant fever, and whole villages almost laid waste by it.

Such a number of sick soldiers was sent to Paderborn as crowded the hospitals there, and increased the malignancy of the distemper, so that a great many died.

When I arrived at Paderborn, in the beginning of January 1761, the fever was upon the decline in the general hospitals, though it was still rife; but by sending off a party of about 200 convalescents to Hervorden, which thinned the hospitals, it became less frequent, and but few died in them. The

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guards

guards marched upon the expedition into Hesse, on the 11th of February, which gave us an opportunity of thinning the wards by sending to billet all our convalescents, which by this time amounted again to near 200, the guards having left 132 men in their hospitals, and the rest of the army sent 71 more to the general hospital, of which number within less than ten days I sent above a hundred to billet; by which means the fever almost entirely ceased in all the hospitals we had before they went away; though there still remained about 400 sick.

Of the sick left to the care of the general hospital: the first regiment of guards left 60 sick, the second 29, the third 28, and the granadiers 15, in their regimental infirmaries; who were mostly ill of this fever, which had become extremely malignant and infectious by the smallness and dirtiness of their hospitals: the infection was so very strong, that, although I procured the sick new airy houses for hospitals, which were kept as clean and well-aired as possible, and procured clean bedding, and clean linen for every man, and had the sick laid thin, yet a number died, and it was some time before we got entirely free of the infection. The first

first and third regiments suffered most, owing to all the sick of each regiment being put into a particular hospital by themselves, which kept up the infection, so that they lost one-third of those left ill of this fever; and many of the nurses, and people who attended them, were seized with it. But not being able to procure particular houses for the sick of the Coldstream or second regiment, and for the granadiers, I distributed them through the different hospitals we had then in town, where the contagion had ceased; and by their being thus scattered, while they were kept very clean, and at as great a distance as possible, from the other patients in the wards where they were put, they lost few in proportion to the first and third regiments, and the disorder did not spread.

The hospital remained at Paderborn till the middle of April, when his serene highness duke Ferdinand ordered all the sick of the British troops to be sent first to Osnabrug, and from thence to Bremen, as he expected that the French would soon take the field with a very numerous army, and he should not be able to protect the hospitals, if they remained scattered up and down the country as they then were; the hospital at Paderborn

then contained about 300 sick, all of whom, except a very few who were very bad, were sent to Osnabrug under the care of Mr. Sinclair, now surgeon to the second troop of horse-guards, and another hospital mate, most of the men were at this time in a convalescent state, except a few who laboured under consumptive, and old dysenteric complaints.

During the time I was at Paderborn, there had been in the general hospitals nearly about 800 men; 500 whom I found in the hospitals, 203 were thrown into them when the army went upon the winter expedition; and about 100 more upon their return.

In the last week of April, I went down to take care of the hospital at Osnabrug, and remained with them till the 9th of June that I went to Bilifield. About the end of May, the weather was very warm at Osnabrug; when this fever began to make its appearance in the corner of a large ward, which was next to one kept for salivating venereal patients; and only divided from it by means of a few thin deals. Perceiving a strong smell in this place, I suspected that the fever arose from the foul steams coming from the next ward, and therefore ordered the salivating
ing

ing ward to be thinned, and removed all the sick from the places near that ward ; and ordered those that had caught the fever to be put into large airy places ; by which means the infection spread no farther, and only one, out of six or seven who had got the fever, died.

At the end of June, the weather was very hot at Bilifield, and this fever began to shew itself in the hospital from its being overcrowded, by a greater number of sick being sent from the army than we had proper places to put them in ; but it was put a stop to in a few days, by the removal of the hospital. Seventy sick were left behind to the care of a mate, most of them ill of the fever, of whom twelve died.

In the beginning of August, a few men were taken ill of the same fever at Munster, in one of the hospitals which was too much crowded ; but its further progress was stopped by sending a number of recovered men to be billeted in private houses.

In November and December 1761, and January, February, and March 1762, we had several men sent from quarters in the town of Bremen to the hospital, sick of the petechial fever : they had been quartered on the

ground-floors of low damp houses, and fresh meat and vegetables were so dear that they could not afford to buy them, but were obliged to live mostly on salt provisions. I was told likewise that the spotted fever was frequent among the lower class of the inhabitants. Some few were seized with this fever in the hospital itself; yet as the house was not crowded, and we had a number of small airy wards, the infection did not spread; and we had but one or two who died of this fever during the winter, in the hospital I attended.

In Summer 1762, we had only ten or eleven ill of this fever in the hospital at Natzungen, and only one died.

When the troops marched from their cantonments, in December 1762, towards the borders of Holland, the twentieth and twenty-fifth regiments of foot left behind them, at Osnabrug, thirty sick; five of whom had symptoms of the hospital fever, though no petechiæ appeared; three recovered, and two died suddenly, being lodged in large open wards (the only places we had to put them in) with the windows all broke, in very cold frosty weather.

In January 1763, we had only three patients in this fever, with the petechiæ upon them,

them, who all recovered. After this we had none taken ill of it as Osnabrug, while I remained there, which was till the 25th of March.

S E C T. III.

Of the symptoms of this fever.

THIS malignant fever begun variously in different subjects; for the most part with cold and shivering, pain in the head, sickness and nausea, foulness of the tongue, dejection of spirits, loss of strength, and with other symptoms, commonly described as peculiar to this fever. In some, it begun with a sharp pain of the side, or other parts, attended with acute-inflammatory symptoms; in others, it put on the appearance of the common, low, or nervous fever, for a day or two. Blood drawn in the beginning from most patients appeared red a-top, and did not seem much altered, except that it was rather of a loose texture; from others it threw up a strong inflammatory buff*; but where the
fever

* Dr. Huxham, in his Treatise on the Ulcerous Sore Throat, p. 36, says, "I have very often met with this buffy or fizy

fever had continued some time, it was commonly of a loose texture, and of a livid or darker colour than usual ; unless when the sick were accidentally seized with pleuritic stitches, or other disorders of this kind.

The reason of this difference of symptoms in the beginning, and of these different appearances of the blood, seemed to be, that such patients as laboured under pleurifies, low or other fevers, being brought into hospitals where the malignant fever was frequent, had their original disorders changed into this fever by breathing a foul infected air, and by their communication with those ill of the fever, and of fluxes ; at other times, a mere acrimony of the blood, set in motion by a supervening fever, determined the disorder to be of this kind ; and I always observed, that those men were most apt to catch this fever,

“ appearance of the blood in the beginning of malignant fevers ; and yet, blood drawn two or three days afterwards, from the same persons, has been quite loose, dissolved, and sanious as it were.” And in his *Essay on Fevers*, ch. viii. p. 108, says, “ The first blood frequently appears florid ; what is drawn twenty-four hours after, is commonly livid, black, and too thin ; a third quantity, livid, dissolved, and sanious. I have sometimes observed the crasis of the blood so broke as to depofite a black powder, like foot, at the bottom, the superior part being either a livid gore, or a dark green, and exceedingly soft jelly,”

whose

whose constitutions had been broke down by previous disorders.

The fever appeared in different forms. Some had only a quickness of the pulse, attended with a slight head-ach and sickness, whiteness of the tongue and thirst, and a lowness and languor; which continued for a week or more, and then went off, either insensibly, or with a profuse sweat, succeeded by a plentiful sediment in the urine. Most of those who fell into profuse kindly-warm sweats recovered, the sweat carrying off the fever. These profuse sweats continued for twelve or twenty-four hours, and sometimes for two, three, or four days. In those who had the fever in this slight degree, the petechiæ seldom appeared; and it was only known to be this sort of fever by the other symptoms, and the malignant fever being frequent at that time in the hospitals.

For the most part the fever appeared with more violent symptoms, the tongue became more parched and dry, and more or less of a delirium came on, attended with the other symptoms commonly described as peculiar to this fever.

When the petechiæ appeared, they came out on the fourth, fifth, sixth, or seventh day;

day ; seldom after the eleventh or twelfth *. They appeared mostly on the breast, back, arms, and legs, and sometimes, though rarely, on the face. They appeared, either like small distinct spots of a reddish colour, or the skin looked sometimes as if it had been marbled, or variegated as in the measles, but of a colour more dull and lurid. As they began to disappear, they inclined to a dun or brown colour, and looked like so many dirty spots. I never saw them rise above the skin ; nor did I once see any miliary eruptions in this fever, while I was with the troops in Germany ; however, we ought not to conclude from thence that miliary eruptions are never observed in fevers of this kind ; for I

* Ramazini, in his Treatise De Constitutionibus Annorum, 1692, 3, 4, in Mutinensi Civitate, sect. 19. mentions the petechial fever which had been frequent the three foregoing years ; in which the petechiæ appeared commonly on the fourth or seventh days, and almost all those died in whom they appeared on the first day. These spots came out first on the neck, the back and breast ; and it was observed that none escaped unless these spots extended themselves as far as the nails of the toes, vanishing by degrees on the upper parts. He tells us likewise, that this fever was attended with an inflammation of the throat, which, about the height of this disorder, terminated in a white ulcerous crust. This sore throat should seem to be the same which we now call the malignant ulcerous sore throat, which I never once saw while I was with the troops in Germany.

have

have since seen them in private practice, and in St. George's hospital*; and Dr. Huxham†, Dr.

* Hannah Smith, a woman about 32 years of age, was attacked with a fever, attended with rheumatic pains, on Friday the 5th of September, 1766, and was admitted into St. George's hospital the 10th; at which time she had a quick pulse, a dry whitish tongue, and complained of pains in all her joints, and of being costive; she was immediately ordered to be bled; to have a blister applied between her shoulders; and to take the saline draught with a scruple of magnesia alba, three times a day. These medicines abated the violence of the pain and fever, and kept her gently open; and she seemed to gain ground daily till Monday the 15th, that the fever increased much, and she became very restless and uneasy, and petechiæ appeared on her breast and arms; and on Thursday a white miliary eruption came out on her breasts and arms, and next day were very thick and large, especially on her right breast, and interspersed every where with red and purplish petechial spots that did not rise above the skin; from the time the miliary eruption appeared, the violent heat, fever, restlessness, and difficulty of breathing, which came on Monday the 15th, all abated; and she found herself cooler and freer of pain than she had done from the first attack of her disorder. On Friday the 19th, she was ordered two ounces of the decoction of the bark, with half a drachm of the confectio cardiaca, every four hours; and to have wine whey for her common drink. After this her fever gradually abated, and she was entirely free from it by the 27th, but remained long weak, and was not dismissed the hospital till the 22d of October.

On the 16th of January 1770, I was called to visit a young lady who had been then three weeks ill of a fever; her breast and arms were covered with petechial spots, and on the 20th, a white miliary eruption came out all over her neck, back, and arms.

† Dr. Huxham, in his Essay on Fevers, ch. viii. p. 97, tells us, that sometimes about the eleventh or twelfth day, on the coming

Dr. Hasenohrl*, and Dr. Lind †, besides many other good practitioners, mention their having observed them likewise.

Many had no petechiæ through the whole course of the disorder; but in all who were very bad, the countenance looked bloated, and the eyes reddish and somewhat inflamed; and though the skin was commonly dry, yet perspiration from the lungs was strong. By these circumstances one might frequently discover that the patient laboured under the malignant fever, without asking any questions.

The symptoms in all the fevers of this kind which I have attended in London, have been nearly the same as I observed in the hospitals in Germany, and required entirely the same treatment.

coming on of profuse sweats, the petechiæ disappear, and vast quantities of small white miliary pustules break out.

* Dr. Hasenohrl, in his treatise *De Febre Petechiali*, cap. i. p. 12. relates a very particular case, where the petechiæ appeared on the fourth, and the white miliary eruptions on the seventeenth day of the fever.

† Dr. Lind, in his *Second Paper on Fevers*, p. 105, mentions spots which rise above the surface of the skin, and are of the miliary kind, as common in contagious fevers, as he observed among the French prisoners in Winchester Castle, in the beginning of the year 1761.

S E C T. IV.

Of the appearances observed in the bodies of those who died of this fever.

Y SINCE I returned from Germany, I have had the bodies of several who died of petechial fevers opened, and have observed that the blood is almost always dissolved and very fluid in the vessels. In general, the stomach and intestines appeared red as if they were slightly inflamed, in the same manner as the eyes are observed to be, in the course of the fever; and sometimes there were black or livid spots on different parts of their surface, and frequently adhesions and slight suppurations; and the inner coverings of the brain, and the surface of the lungs and the pleura, and other membranes, generally appeared more or less red.—I have seen several instances where the febrile matter has fallen on the lungs, and the patient died consumptive, and after death the lungs have been found to be suppurated; and, at other times, abscesses have been formed in other parts of the body.—I have never yet met with any case where there was an abscess formed in the brain,

brain, though sir John Pringle mentions his having seen several.

From the whole, I think, we have reason to believe, that this fever in general occasions more or less redness; I do not know if we can properly call it true acute inflammation of the membranes; and that the febrile matter is apt to fall on particular parts, and there to create abscesses; particularly in the brain, the lungs, and the glandular organs.

S E C T. V.

Of the method of cure of putrid petechial fevers.

AS the petechial and all putrid fevers are sometimes less and sometimes more malignant, and the constitutions of men differ much from one another, no fixed and unvariable rules can be laid down for the treatment of all; and the method of cure ought to be something varied in the treatment almost of every individual.—But in general, the more recent the disease, the fuller and harder the pulse; the less dissolved the blood, and the greater the strength, the more cooling the method of cure ought to be—and the more malignant the fever the longer

longer it has continued, the more dissolved the blood, the lower the pulse, and the greater the prostration of strength, the less does the patient bear bleeding, and other evacuations, and the more necessary are acids, wine, the bark, and cordials.

When men were taken ill of a fever, which we suspected to be of the malignant kind, our first care was to lay them in airy places, separate as much as possible from the other men, and to keep them extremely clean; and they were put on low diet, and allowed as much barley or rice-water as they chose to drink, which was commonly ordered to be acidulated with the spiritus vitrioli, as lemon-juice, and other vegetable acids and acescent liquors could not always be procured and carried about with the flying hospital.

In all fevers of the putrid kind, the food and drink ought to be made up of preparations of vegetable antiseptic substances which help to correct the too great tendency of the blood to putrefaction; ripe fruit answers these purposes, and is both grateful and refreshing to the sick, and where it can be had ought to make part of their allowance.

Dr. Parris.

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For the first two or three days we could seldom distinguish, with certainty, that the fever was of the malignant kind, though we had often reason to suspect it. The pain of the head, the fulness and quickness of the pulse, and other symptoms, led us commonly to take away more or less blood, which the patient bore easily, and for the most part it gave relief *. We seldom repeated this
evacua-

* Physicians have been long divided in their opinions with respect to bleeding in this fever, some approving of it, and others condemning it altogether; Dr. Hoffman, after mentioning their different sentiments, says, that after a long and extensive practice he could affirm, that in general, moderate bleeding, especially in the foot, was of service in the beginning of such fevers to patients who were strong and plethoric; or where the fever run high, or the patient had been much accustomed to bleeding. See Hoffman, *Oper. tom. ii. p. 92. sect. 1. cap. xi. Obs. vi. Epicrasis.*

The late Dr. John Hume, who had served many years as a surgeon in the navy, and had many of these fevers under his care, gave me the following account of his treatment in the first stage of this fever. “ In the first years of my practice I
“ seldom used the lancet in malignant fevers, being deterred
“ by an opinion I had imbibed from books, that bleeding sunk
“ the patient too much, and disabled the habit from throwing
“ off the disease; but when my practice became extensive, I
“ ordered some of my athletic patients to be bled, if I was
“ sent for in the first two or three days after the attack; and I
“ saw such good effects from this practice, that I continued it
“ constantly, where old age, or a very weak constitution, did
“ not forbid it; however, though bleeding is salutary in the
“ beginning, I think it is equally fatal in an advanced state of
“ the disease. After bleeding, I gave an emetic as soon as I
“ could,

evacuation where we suspected the fever to be of the malignant kind, unless a pleuritic stitch, an acute pain of the bowels, or some other accidental symptom, required it; or the patient was strong, and there were evident symptoms of fullness immediately before we intended giving the bark, as shall be mentioned afterwards; for under other circumstances, if the bleeding was repeated, and other evacuations used freely, I always observed that it did harm, and was apt to sink the patient too much, as most good practitioners have remarked.

However, as I before observed, we can lay down no certain fixed general rules with

“ could, always the same day if the operation had taken place
 “ in the forenoon; and next morning I gave a purge; for I
 “ looked on the cleansing of the primæ viæ in the beginning
 “ as essential towards bringing these fevers to a happy issue.”

Dr. Huxham, though he says “ yet bleeding to some degree is most commonly requisite, nay necessary, in the strong and plethoric;” yet he afterwards makes the following remark: “ Besides, the pulse in these cases sinks oftentimes surprisingly after a second bleeding, nay sometimes after the first, and that even where I thought I had sufficient indications from the pulse to draw blood a second time.” See his *Essay on Fevers*, chap. viii. And sir John Pringle observes, that in the second stage of the disorder large bleedings have generally proved fatal, by sinking the pulse, and bringing on a delirium. *Observations on the Diseases of the Army*, part III. ch. vii. sect. 5.

R

respect

respect to blood-letting in this fever; for as the disorder is sometimes more, and sometimes less malignant, so each particular patient requires a particular treatment; but in general, the more malignant a fever is, the longer it has continued, and the more the blood is dissolved, the less it bears the use of the lancet, and the more the patient is sunk by such evacuations*.

After bleeding, an emetic, and afterwards a dose of rhubarb, or of salts, or of some other opening medicine, is of service; for I have always observed, both in Germany, and in this country, that nothing is of more advantage in the beginning of fevers, particularly of those of a putrid nature, than emptying thoroughly the first passages early in the disorder; for generally the stomach and

* Dr. Roup, in his treatise, *De Morbis Navigantium*, gives an account of a putrid fever attended with petechiæ, which was frequent aboard a ship in the island of Curacoa, in the West Indies; it made a very rapid progress, and often killed on the 2d, 3d, or 4th day; he says, that he found where there was a strong quick pulse in the beginning, that bleeding was the most effectual remedy to stop the rapid progress of the fever; and afterwards, though he tells us, that a second bleeding sometimes sunk the patient, he concludes with these words, “*Per hunc vero facilem & simplicem tractandi ægros modum tanta perfecti, ut cum vanum timorem ergo venæsectiones in his morbis putredinem augentes, mihi in initio formatum, seposueram, nemo amplius in navi obierit.*”

bowels

bowels are loaded with bilious or other corrupted humors, which have been collected there, and furnish a constant supply of putrid particles which are taken up into the blood by the absorbent vessels, and increase the heat, fever, and other symptoms, while they remain pent up within the bowels.—After the operation of these medicines, the patients were often greatly relieved; and I think that I have frequently seen fevers much shortened by a free and well-timed evacuation of this kind †.

If

† Dr. Strack, in his Medicinal Observations De Morbo cum Petechiis, seems to think that these fevers take their rise entirely from putrid humors, or some putrid substance lodged in the bowels; whether it be the remains of vitiated food, or of worms, or of other putrid matter; and that the cure principally depends on emptying thoroughly the bowels by means of mild purgative medicines, or by nature bringing on a looseness—He mentions bleeding, cooling remedies, acids, the bark, camphor, serpentaria, &c. but seems to look upon none of them as certain and constant remedies to be used in this fever, though he thinks they may be often employed with advantage where either their operation is assisted by the use of purgative medicines, or a looseness comes on to carry off the corrupted humors that have been lodged in the bowels.

He believes that the morbid colluvies is seated below the stomach, for vomits give less relief than purgative medicines, and because all who die of this fever are affected with a sphacelus of the intestines; unless some other part has been previously weak, when the force of the fever often attacks such weak parts, and hence the lungs, the liver, the brain, and other viscera, have been sometimes found affected.

If in the course of the disorder the sickness and nausea returned, attended with griping and costiveness, or very fetid loose stools, these medicines were repeated, or laxative clysters administered, and if their operation ruffled the patient much, a gentle opiate was given in the evening.

After evacuations, if the pulse kept up, we commonly gave nothing but the saline draughts, with the pulvis contrayervæ, or some such temperate medicine, for the first day or two. As soon as we could distinguish the fever to be of the malignant kind, and that the pulse rather sunk, we joined some of the cordials to the saline medicines, and allowed the patient more or less wine, according to the degree of the fever. Dr. De Haen has found fault with Sir John Pringle and

What he thinks a farther proof of the bowels being the principal seat of this disorder is, that they are often attacked with sharp pains, and are often swelled, and cause an anxiety and difficulty of breathing; and that many in this disorder are affected with a slight touch of the jaundice. See his *Observ. Medicinal.* p. 69, 133, 216, &c. Carolsruhæ, 1766.

Although the emptying the bowels in these fevers be a necessary precaution; yet we cannot trust entirely the cure of these fevers to the use of purging medicines, otherwise we will be in danger of sinking the patients too much, and of hurrying them to their graves; for, as we observed above, wine and cordial medicines are often necessary to support the sick in the low state of these fevers.

Dr.

Dr. Huxham, for administering cordial medicines and wine in the low state of this fever; but nothing answered so well with us as these remedies under such circumstances; and frequently every symptom changed for the better by their use; and even when I gave the bark, in the manner recommended by Dr. De Haen, it was often found necessary to join the free use of wine*, cordials, and

* Petrus a Castro, in his account of a petechial fever, which was frequent at Verona, tells us, that the sick had a great thirst, and an aversion to meat, but all of them had the strongest desire for wine, and were perpetually asking for it, even those who at other times used to be very temperate; and that this proceeded from an instinct of nature, which wanted something to support the strength. De Feb. Malig. sect. iii. cap. 26. Dr. Hoffman recommends the moderate use of Rhenish wine, as one of the best preservatives, and as a useful remedy in the decline of these fevers; and he says, that in the beginning of those fevers, no remedies do more service than acids, especially lemon-juice, or vinegar mixed with diluting ptisana, and joined to the use of the mild diaphoretic powders and simple waters. See Hoffman. Oper. tom. ii. sect. i. cap. xi.

Dr. Huxham, in his Essay on Fevers, has the following very judicious remark on the use of wine: " In this view, and in
" those above mentioned, I cannot but recommend a generous
" red wine as a most noble, natural sub-astringent cordial, and
" perhaps art can scarce supply a better. Of this I am con-
" fident, that sometimes at the state, and more frequently in
" the decline of putrid malignant fevers, it is of the highest
" service, especially when acidulated with juice of Seville
" orange or lemon. It may be also impregnated with some
" aromatics, as cinnamon, Seville orange rind, red roses, or
" the like, as may be indicated, and a few drops of elix. vitrioli

and blisters *, in order to support the patient's strength.

A late author has affirmed that blisters, instead of being of service, always do mischief in that kind of fever we are now treating of, from a notion that they introduce a very acrid salt into the blood, which is a

Y " may be added. Rhenish and French white wines, diluted,
 " make a most salutary drink in several kinds of fevers, and
 " generous cyder is little inferior to either. The Asiatics,
 " and other nations, where pestilential disorders are much
 " more rife than with us, lay more stress on the juice of le-
 " mons in these fevers than on the most celebrated alexiphar-
 " mac." Chap. viii. 2d Edit. p. 123—4.

Acid and acescent liquors have very justly been recommend-
 ed and used by most late practitioners, in this as well as in
 other malignant diseases. Vinegar-whey, barley-water aci-
 dulated with lemon-juice, and such other liquors, make good
 drinks for the sick; but we were obliged, for the most part,
 to use the vitriolic acid for acidulating the patient's drink, as
 it was the easiest procured and carried about with the flying
 hospital.

* If the preventive method does not succeed, Dr. Lind ad-
 vises to have recourse to blisters; and says, that sixteen out of
 twenty will next morning be free of the fever. But adds, this
 is said, provided the source of their infection be not so highly
 poisonous as it was in the Garland ship, or in other such vio-
 lent contagions. Dr. Pringle mentions his having applied
 blisters early, but without relieving the head, or preventing
 any of the usual symptoms. I have often ordered blisters
 pretty early in the disorder; and though I have frequently
 found them of use in keeping up the pulse, and relieving the
 head, and other symptoms, yet I never saw them have such
 an immediate effect as Dr. Lind mentions.

most

most powerful solvent of its texture; but this opinion is certainly founded on mere theory, and not on practice and observation; for I have seen many hundred examples of their good effects in such fevers;—like other powerful remedies they certainly may do much mischief if unjudiciously used.

In private practice I have often observed that ripe fruits proved most refreshing cordials in fevers of a putrid kind; the sick commonly have a longing for them, and their mild acescent and acid juices assist in allaying the violent thirst and bad taste of the mouth, at the same time that they are amongst the best correctors of the putrescent acrimony of the blood.

And I have seen lemon-juice made palatable by the addition of sugar, prove a most cordial antiseptic in this fever, either given in draughts of one, two, or more ounces, five or six times in the day, or mixed with the patient's common drink.

In the year 1764, Dr. Macbride of Dublin published his *Experimental Essays*, in which he mentions that fixed air, or that air or gas which is emitted from fermenting liquors, or separated from alkaline salts, and calcarious earths on the addition of an acid,

R 4 is,

is one of the strongest antiseptics known; and that it will even make sweet, or fresh, putrid meat exposed to it; and from thence he recommended the carrying out of malt for making wort aboard of ships going long voyages, as a substance containing a great quantity of fixed air, and likely to be useful in preventing the scurvy. And since that time the reverend Dr. Priestley, in the *Philosophical Transactions* has recommended fixed air, given in clysters, as a most excellent remedy for the cure of putrid fevers; and has given an instance of its having been administered with success by Mr. Hey, of Leeds in Yorkshire; but as I have not heard more of its having been administered by others, nor have used it myself, I cannot recommend it for general use in this form, till farther trials have been made with it. However, I have often given it in another form, before it was known that fixed air possessed these qualities, or even it was known what it was †, Riverius had long ago recommended

† It is many years ago since the late very ingenious the reverend Dr. Stephen Hales, found that a great quantity of air was contained in the human calculus and in alkaline salts.

In the year 1755, M. Venel, published his *Analysis of the Seltzer Water*, and proved, that it was fixed air, and not an acid

mended in cafes of obftinate vomiting, to put an alkaline draught into a large tea-cup, and
 juft

acid which gave mineral waters their brisk acidulous tafte; and he mentioned a method by which an artificial Seltzer water, refembling the genuine, might be made, by impregnating water with the air difengaged from the mineral alcali on the addition of fpirit of fea falt. See Memoires de Mathematique & de Phyfique prefenté a l'Academie Royal des Sciences & lues dans fes Affemblées, tom. ii. p. 53, publié a Paris 1755.

M. Lafonne, in his Analyfis of the Water of the Baths at Vichy, found, that earth and iron were diffolved in mineral waters by the affiftance of air. See Mem. de l'Academie des Sciences pour l'année, 1753, publié a Paris 1757.

And what M. Venel and M. Lafonne have faid on this fubject has fince been confirmed by Dr. Le Roy, profeflor of phyfick at Montpellier, in his Treatife on Mineral Waters, published in 1762; and fince by the honourable H. Cavendifh, Dr. Priestley, and others, in the Philofophical Tranfactions, vol. LVII. LIX. and LXII. for the years 1767, 1769, and 1774.

In a letter which I had from Dr. Dejean of Leyden, dated the 20th of June 1777, he mentions that he believes that the fulphur in the Aix la Chapelle waters is diffolved by means of fixed air; for that having been lately at that place, and after making a great many experiments with the waters, he at laft mixed a folution of arfenic in the marine acid, with fome of the water of the emperor's bath, and immediately a true and genuine powder of fulphur was precipitated to the bottom of the vefel in which the water was contained, which convinced him of what is above mentioned, that thefe waters contained a folution of real fulphur, and that the fulphur was diffolved in them by means of fixed air.

From feveral properties of fixed air it has been fufpected by Mr. Power and others, to be an acid *fui generis*; for united to cauftic calcareous earths, it produces thofe cryftals called dog-tooth fpar.—With cauftic fixed alkalies it cryftallizes, and produces mild fixed alkalies, with cauftic volatile alkalies; and
 from

just as the patient was about to take it to mix with it a proper quantity of lemon-juice and to swallow it down immediately, so that the effervescence might go on in the stomach. This I have found to be a most excellent remedy in putting a stop to vomiting and sickness in many fevers, which had resisted the effects of other remedies ; and I now make no doubt, but that the effect of the fixed air, disengaged from the alkaline salt, on the mixture of the acid, by correcting the putridity of the humors in the stomach, contributed as much, and perhaps, a great deal more to the removing the sickness and nausea, than the gentle irritation and distention of the fibres of the stomach, to which the effects of the medicine were formerly attributed.

After reading the treatises of Dr. De Haen and Dr. Hasenohrl, on this fever, in the year 1759, I resolved on giving the bark in large quantities, from four to twelve drachms in the day, and found it to answer the recommendations given by these gentlemen ; and shall re-

from all these bodies it is dispossessed by stronger acids. From its greater fluidity it seems to be more efficacious and more convenient for counteracting putrefaction in living bodies than the other acids ; and Mr. Power adds, if it is an acid, it is the most universal acid in nature. See Medical Transactions, published by the College of Physicians in London, vol. III. art. 7.

late

late here two or three cases, out of above a hundred and fifty in which I gave it in Germany; and add some remarks on the effects I have observed it to have in many cases, in which I have administered it since my return to England.

I. Robert Wilson, of the second regiment of foot-guards, on 19th of February, 1761, was seized with a shivering and coldness, succeeded with heat, thirst, a short dry cough, difficulty of breathing, head-ach, and slight stiches in his breast; some blood was taken away, which was fizy, and he was ordered two ounces of the sperma ceti mixture, with the spiritus Mindereri, every two or three hours. He continued without any manifest alteration in the symptoms, till the 21st, when a number of dun petechiæ appeared all over his body, particularly on his breast. The stiches and cough were then much easier, and he had his medicines as before. On the 22d, he was seized with a delirium, and was somewhat comatose; when he was ordered a drachm of the bark every six hours. The 23d, the comatose symptoms had increased, and he had slight twitchings of the tendons, a dry brown-coloured tongue, and a faltering in his speech. The bark was continued,
with

with the addition of two spoonfuls of mountain wine every two hours. On the 24th, he had several loose stools. The 25th, he was still loose, and went on as before, with the addition of six grains of the *pilulæ saponaceæ* in the evening. The 26th, the *petechiæ* were not so apparent as before, but he had still the nervous symptoms, and his breathing grew more difficult; and therefore a blister was applied between his shoulders, and his medicines continued; as they were likewise on the 27th, without any alteration in the symptoms. On the 28th, his tongue became moister, and the pulse, which had been low and quick the four preceding days, became fuller and slower. On the 1st of March he was much more sensible, his tongue more moist, and the twitchings of the tendons much less; and in the evening he fell into a profuse sweat, which lasted all the 2d. On the 3d of March, his feverish symptoms were much abated, his pulse was calmer, his skin moist, his drought less, and his urine dropt a plentiful sediment. On the 4th, his fever was almost entirely gone, but he had still a cough, and spit up a viscid matter. He was ordered to go on as before, with the addition of two spoonfuls of the *sperma ceti* mix-

mixture, and the spiritus Mindereri, when his cough was troublesome. He followed this course till the 9th, when his cough and fever being gone, he was ordered a dose of tincture of rhubarb; after which he recruited his strength daily, without the assistance of any more medicines.

II. On the 5th of March 1761, Thomas Stagg, of the second regiment of foot guards, was seized with the same symptoms as Robert Wilson had been in the beginning of his fever, but in a more violent degree. He was bled to about twelve ounces, and was ordered a saline draught every six hours. On the 6th, the blood, which had been drawn the day before, had thrown up a slight buff; it appeared to contain but a small proportion of serum, and the crassamentum was of a loose texture. The feverish symptoms had increased, with the addition of a delirium: pergit. On the 7th, the delirium was grown more violent, so that he could scarce be kept in bed; his breathing was difficult, his eyes red and florid: a blister was applied to his back, and the saline mixture continued. On the 8th, there was no alteration in the course of that day; but being lower towards night, blisters were applied to his legs, and he was ordered

ordered to have a pint of wine allowed him in twenty-four hours. On the 9th, the petechiæ appeared over his whole body, of a broad dunnish kind; his breathing became easier, and his pulse stronger, though the delirium was still as bad as before: he was ordered a drachm of the bark every fourth hour in a saline draught. On the 10th, the bark gave him several loose stools, but the petechiæ were of a more florid colour; the delirium was less, and his tongue moist, and therefore he was ordered to continue the same medicines as the day before, with the addition of ten grains of the pilulæ saponaceæ in the evening. The 11th day, he fell into a fine breathing sweat, his pulse became fuller and slower, and the delirium abated: p. The 12th, his pulse was regular, and the delirium gone, and he was much inclined to sleep. The 13th, after a calm sleep, which had lasted twelve or fourteen hours, he became quite free of fever. After this he continued the use of his medicines for some days, and recovered his health and strength daily.

III. On the 23d of May 1761, Lionel Thompson, of the first regiment of foot guards, was seized with all the symptoms of
a peri-

a peripneumony, attended with a high fever, for which he was ordered to be bled. After losing eight ounces of blood, he fell into a fainting fit; on recovering out of which, his breathing being still much affected, he had a mixture made of four ounces of the lac ammoniacum, and one of the spiritus Mindereri, of which he was desired to take two spoonfuls every four hours. The 24th, the symptoms the same: he complained of having had no stool for some days, and took half an ounce of the sal cartharticum amarum, which gave him two loose stools. On the 25th, his pulse was small and quick, his breathing difficult; he was low, and had a slight delirium: a large blister was applied between his shoulders, and the medicines continued. On the 26th, in the morning, the petechiæ appeared, and his breathing was freer: he was ordered a drachm of the bark, in a saline draught, every four hours. The 27th, the pulse better: p. The 28th, was more sensible, and had a kindly warm moisture all over the skin. The 29th, the fever was much abated, and his tongue, which was before parched and dry, became moist and white: he continued the use of the cortex for three days more, which removed

moved the fever ; and being costive, he took a dose of the tincture of rhubarb. After this he used the bark for a few days longer, and got perfectly well.

It is long since the Peruvian bark has been used by practitioners in malignant disorders, though I do not know that any body gave it in this fever to the amount of an ounce per day, before Dr. Haen and Dr. Hasenohrl. Dr. Ramazini mentions its having been tried in the petechial fever, in the years 1692, 1693, 1694. And in a treatise on the plague, in the Ukraine, published at Petersburg, in the year 1750, we are told, that in the French Translation of the Philosophical Transactions for the year 1732, there is a note to p. 264, telling, that Mr. Amyand informed the Academy of Surgery at Paris, that Mr. Rushworth, surgeon, had wrote to Sir Hans Sloane, on the 23d of May 1723, that when he was surgeon to a ship, in the year 1694, he had cured some men ill of the malignant fever, attended with pestilential buboes, by means of the Peruvian bark. Dr. Huxham has recommended a tincture of the bark ; and sir John Pringle, a strong decoction of it, with some of the tincture in malignant fevers.

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The bark has not only been found useful in this fever, but likewise in most disorders of a malignant nature.—In gangrenes—in the bad sort of small-pox—in the putrid disorders of the West-Indies—in the malignant ulcerous sore throat—and even in the plague itself.—Dr. Morton has observed, that the Faculty of Medicine at Naples had very justly proposed the use of the bark for the cure of the plague, and he recommends it for further trial, believing it to be a good and useful remedy in such cases. And in the 54th volume of the Philosophical Transactions, which was published in the year 1764, Dr. Mackenzy, after thirty years practice at Constantinople, gives a very distinct and particular account of the plague as it commonly appears in that city; in which he proposes a cure extremely similar to what is here recommended for the cure of the petechial fever; and he mentions some cases where the bark had been used with success; and since his return to this country in 1770, he has told me, that from the time he wrote this account of the plague in the year 1763, to the time that he left Constantinople in autumn 1769, that he had known the bark administered in a number of pestilential cases; and that in general it had

a good effect, though it did not succeed in all; but that from what he had observed, he thinks it is the most useful remedy, and the most to be depended upon of any, that has hitherto been used in this most terrible distemper.

After giving the bark with success, in the two first of the cases mentioned, and to two young gentlemen, mates of the hospital, who had caught the fever from their attendance on the sick, I gave it to above a hundred and fifty at Paderborn, and elsewhere, during my attendance in the military hospitals in Germany; and although it did not answer in every case, yet it was found to have a better effect than any other remedy that was tried. We joined different medicines with it, according to the state of the patient. We gave the *confectio cardiaca*, *rad. serpentar. Virgin.* and other cordial medicines, and wine, when the pulse was low; *oxymel scilliticum*, and other pectorals, when the breathing was difficult; opiates, where the patient was inclined to be too loose; the *spiritus Mindereri*, and other diaphoretics, when we wanted to promote a free perspiration; and we applied blisters as occasion required.

Since

Since my return from Germany, I have frequently found that from five to ten grains of camphor, rubbed down with an equal part of peeled almond, and made up into a bolus with a scruple of *confectio cardiaca*, given with two ounces of a strong decoction of the bark every four hours, was of great service in the low state of this fever; and that sinapisms applied to the soles of the feet and let remain till they became uneasy, and then removed, and poultices of bread and milk put in their place, were of use in keeping up the pulse, and preventing the patient from sinking when the *vis vitæ* was very low.

When the patient was strong, the pulse quick and full, the eyes looked red, and the breathing was difficult, after the petechiæ appeared, I took away more or less blood before giving the bark. Most practitioners of late years have been against bleeding in this stage of the disorder; but trusting to the assurances giving by Dr. Hasenohrl of its being safe, nay of advantage to bleed at this time, if the symptoms required it, I ventured upon it, and found it to be of the greatest service, in many cases, in the hospitals at Paderborn and elsewhere; and parti-

cularly in two cases at Bremen, and one at Osnabrug, where it gave immediate relief, and seemed to shorten the disease much. One of the patients at Bremen, Robert Ellis, belonged to an independent company; the other, Francis Hamstan, of the 24th regiment, had formerly had his skull fractured, and took the fever, while he was in the hospital, for violent head-achs, which he had been subject to, at times, ever after his skull had been fractured. The case at Osnabrug was a nurse of the hospital, whose name was ——— Andrews, a woman about twenty-five years of age, who, after attending a dragoon in the small pox, and suckling at the same time her own child, then in the same disorder, was, on the 18th of January 1763, attacked with a fever. I saw her for the first time on the 20th, and found her pulse quick, full, and strong. She complained of a violent head-ach; for which she was bled, and took the saline mixture, with nitre and contrayerva. Next day, the 21st, her blood appeared very fizy, and she complained of having been constive for some days. We gave her immediately an ounce of the sal cathart. amar. which operated well. She continued much in the same way the 22d, and had some loose stools
that

that day. Being still inclined to be loose the 23d, instead of her former medicines, she was ordered the spiritus Mindereri mixture, with mithridate. This checked the purging, but did not stop it entirely. The fever went on, without any remarkable change, till the 27th; at which time the petechiæ appeared all over her body, attended with a redness of the eyes, and a violent oppression and pain of her head, and a quick pulse. I ordered six ounces of blood to be taken away immediately, and a large blister to be applied to her back, and, at the same time, ordered her eight ounces of a cordial mixture, with half an ounce of the extract of the bark in it, to be taken every twenty-four hours. The 28th, her pulse was not so hard, her head was much easier, the redness of her eyes was much less, and the petechiæ had begun to die away. The blood which was taken away the day before, had a thin buff at the top, but the crassamentum underneath was of a dark colour, and of a loose texture: p. On the 29th, she told me that she had had two or three loose stools, and she was lower than the day before; and therefore a drachm of mithridate, and two drachms of the tincture of cinamon, were added to her cordial mix-

ture, with the cortex; and she was allowed half a pint of red wine, mulled with cinnamon, per day. 30th, her tongue was rather moister than the day before; and she not so low, but she was still inclined to be loose; and therefore was ordered the anodyne draught at nights, and to continue the other medicines. 31st, she was still inclined to be loose; but her pulse kept up, her tongue was moister, and she found herself pretty easy: p. Feb. 1st, her pulse pretty strong, and she found herself much cooler, and freer from the fever, and complained of a dullness of hearing. On the 2d, in the morning, she felt a warm moisture all over her skin, which, about noon, broke out into a profuse sweat, and continued till the 4th; when it went off, and her urine let fall a copious whitish sediment. She had then little or no fever. The dullness of hearing still continued, though it was much less than before. After this the deafness went gradually away. She continued the use of the cordial mixture, with the cortex, till the 12th, and recovered strength daily. After this, she had no other medicine, except two doses of the tincture of rhubarb, and was soon in good health, and able to discharge her duty as a nurse.

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However, it ought to be observed, that we must not bleed so freely, in this or any other stage of the malignant fever, as in acute inflammatory disorders, otherwise we shall sink the patient, and hurry him to his grave; and that bleeding can only take place with safety and advantage, under the circumstances above mentioned, immediately before giving the bark freely; or where some accidental sharp pain in the breast or bowels, or some other violent symptom, may require it. They err equally, who recommend bleeding freely in this fever, with those who entirely forbid its use.

Since my return from Germany I have attended a number of patients, ill of fevers with petechial spots, and have found the same method equally successful in England as in Germany; and almost the only difference in the treatment has been in giving early in the disorder one or two grains of tartar emetic, dissolved in two or three ounces of water, every half hour till it vomited, or vomited and gave a loose stool, in cases where the tongue was foul, and the patient complained of sickness, or a load at the stomach before administering the bark; and I have generally

found it to have a good effect †; and in some cases where the secretions were obstructed I have seen the addition of $\frac{1}{8}$, or $\frac{1}{4}$ of a grain of tartar emetic to each dose of the bark of service.

From what I have observed of these fevers, when there are only two or three sick of them in an hospital at a time, I think that if they

† Dr. Roup, in his treatise *De Morbis Navigantium*, pars iii. cap. 1. gives an account of a fever of this kind under the name of *Febris Critica*, or *Synochos Putris*, which was frequent aboard a fifty-gun ship (the *Stadt Delf*) while she lay off the port of Naples in the beginning of the year 1757; there were 300 sick aboard, most of them ill of this fever; of whom 15 died. In his account he divides them into three classes.—1st, The vigorous, who were of a middle age, or young.—2d, The weak, or those who had had the scurvy the preceding winter.—3d, Those who actually laboured under the scurvy.

1. Those of the first class, he says, he treated in the antiphlogistic method in the beginning; but in the decline, if they had either colliquative sweats, or a purging which continued too long, or there were considerable remissions, he exhibited the bark, and it invigorated the patients, and raised the pulse.

2. Those of the second class he commonly vomited in the beginning, gave them acid juleps with nitre and camphor, and after twice bleeding, gave them pills made with extract of the bark, serpentaria, contrayerva, and sal volatile; and where they had colliquative sweats, or were very low, and subject to fall into fainting fits, nothing had such a good effect as the cortex given freely, and in large doses. It rescued many from the jaws of death; those who had the petechiæ equally with the others.

3. Those of the third class were commonly low and did not bear evacuations, and therefore he fled immediately to the bark, as to a sheet anchor,

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be properly treated, and kept in clean airy apartments, they are by no means so dangerous as is commonly imagined; and that it is only the foul air of crowded, or dirty hospitals, jails, ships, &c. or the effluvia from a number of people ill of these fevers, lying in the same room, which keeps up the infection, and renders them so extremely fatal as they are sometimes observed to be. And I have remarked, that the bark is a much more certain and efficacious remedy where the petechiæ appear than where they do not.

Although we found the bark to be in general the best remedy in this malignant petechial fever, yet it did not answer in every case; for in some we found other remedies had a better effect: and therefore, when we observed that, notwithstanding the use of the bark, the patient sunk, and the symptoms grew worse, we did not persist obstinately in its use, but tried the effect of other medicines.

Towards the end of May 1761, two soldiers in the hospital, at Osnabrug, were taken ill of this fever; who, after using the bark freely, and being allowed a pint of red wine per day, for some days together, began to sink, and had a delirium and other bad symptoms

toms hastening on : upon which I laid aside the use of the bark, and ordered each of them a blister to the back, and to take a cordial draught, with fifteen grains of musk in it, every four hours ; and to have their wine mulled with cinamon ; and although at that time they were both so low that I scarce imagined they would live twenty-four hours, yet next day I found them greatly mended ; and they had a kindly warm moisture all over their skin, and the pulse had rose considerably in both. By the continuance of the same medicine the feverish symptoms gradually abated, and they both got well.

About the same time, having given the bark freely for some days, and applied a blister, to another patient, after the petechiæ had appeared, I found him one morning so low that his pulse could scarce be felt. He could not speak ; he had a delirium, and rather a tremor than a subfultus tendinum, and he had all the appearance of a dying man. However, as he still swallowed whatever was put in his mouth, I changed the bark mixture for draughts, which contained a scruple of the confectio cardiaca, and seven grains of the sal vol. corn. cerv. each, and ordered one to be given immediately, and afterwards to be

be repeated every four hours ; and, in the intervals, to give him frequently a tea-cup full of red wine, mulled with cinamon ; and to apply two large blisters to his legs. Next day, his pulse had rose ; and by the continuance of the same remedies it became gradually fuller and stronger, and the third day after he recovered his voice ; and a warm kindly moisture which ended in a profuse sweat coming on, the feverish symptoms went off soon after, and he recovered his health.

Dr. Huxham, in his Treatise on the Ulcerous sore Throat, p. 54, &c. condemns the use of the volatile alkaline salts, in fevers of the putrid, pestilential, or petechial kind, as being apt to heat too much, and to hasten the dissolution and consequent putrefaction of the blood. However, I cannot help thinking that they are the best remedies we can use on some particular occasions, even in this fever ; for we have no remedy which gives such a sudden and brisk stimulus to the fibres as they do. And I have known many cases of patients who were extremely low, and whose pulse was scarce to be felt, and others who were apt to fall into fainting fits, who have been preserved by large and repeated doses of these

these salts, and the free use of wine, and acесcent liquors, to correct their alkaline acrimony in the blood. Though as soon as such patients had recovered from this low state, I laid these medicines aside; because I cannot help agreeing with the doctor in the belief, that their continued use will produce the effects he mentions. For although it be true, that these salts, when mixed with putrescent liquors, or with dead animal substances, resist putrefaction, and, like ardent spirits and vinegar (the other products of fermentation) check and put a stop to that very process which produced them: yet it is also true, that when mixed with the blood of living animals, they stimulate the vessels, and increase the heat and momentum of the blood, and dissolve it; and therefore I cannot but disapprove of the continuing their use longer than is immediately necessary.

At Bremen there were two men, one in January, and the other in February 1762, on whom the cortex had but little effect, who recovered by the free use of mixtures, with the confectio cardiaca and rad. serpentariæ, and of wine, with the application of large blisters. Several cases of this kind occurred in the hospitals, where the bark did not answer.

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There is one thing to be observed with respect to malignant fevers, which is, that if ever they appear in large crowded hospitals, unless we can thin the wards, and procure a free circulation of air, and keep the hospitals and sick extremely clean, the fevers will continue to spread, and great numbers will die ; and even the most efficacious remedies will have little or no effect *. And that when once the infection is grown strong, it requires the greatest care, and some time, before it can be entirely got the better of. And that if a great number of men, ill of this fever, be kept in the same ward, they will help to keep up the infection ; and therefore it is always proper, when it can possibly be done, to lay but a few of them in one ward ; not above one-third of the number generally admitted.

* The late Dr. J. Hume, told me, that in the year 1755, while he was with admiral Boscawen, some of the ships of war sent to North America under his command, carried out with them a malignant jail fever, which had been brought aboard by impressed men from the tenders ; that through want of good air, and of many necessaries, the fever continued to spread while they remained at sea, and a great number died ; but when they arrived at Halifax the sick were lodged in tents, or in very old shattered houses that admitted the air very freely, which put a sudden and effectual stop to this disorder.

S E C T. VI.

Of particular symptoms attending or following these fevers.

I. *Of a purging.*

MANY of the patients, towards the height of this fever, sooner or later, had a purging, which seldom proved critical; and some were seized with the flux. A gentle diarrhœa, such as did not sink the patient, was commonly of service*; but when violent, or a dysentery came on, the case was always dangerous; for whatever stopped the flux increased the fever; and if the purging or flux continued, it sunk the patient. Such

* Dr. Hoffman says, that no excretion is more salutary than a diarrhœa in the decline of these fevers; and that in the course of fifty years practice he had often seen these petechial fevers carried off by a purging coming on between the 7th and 14th days; and that nothing proved more pernicious than stopping a critical diarrhœa; and he observes, that these fevers are to be cured principally by the use of opening medicines given in due time, of which sort he recommends manna, and cream of tartar, syrup of red roses, sal polychrest, and such like; but cautions us against the use of rough purgative medicines, even of senna; and he remarks, that a violent purging in the beginning of this fever is often very dangerous. See Hoffman, Oper. tom. ii. sect 1. cap. xi.

fluxes

fluxes we treated in the manner to be mentioned afterwards, when we come to the history of the dysentery.

2. *Of worms.*

In this fever, it was common for patients to vomit worms, or to pass them by stool, or, what was more frequent, to have them come up into their throat and mouth, or sometimes into their nostrils, while they were asleep in bed, and to pull them out with their fingers. Some men passed only one worm; others, two or three; some, six or seven; and one man, of the guards, in January 1763, after passing three by stool in the course of a fever of this kind, discharged fourteen more upon taking a dose of rhubarb and calomel after the fever was over. The same thing happened to most of the British soldiers, brought to the hospitals for other feverish disorders as well as this.

Lancisus believes that these worms are not the cause of the fever; but being lodged in the intestines, before the fever comes on, they are annoyed by the increase of the heat, and the corruption of the humours, in the cavity of the intestines of persons labouring
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under fevers, especially of the putrid kind ; and so they begin to move and struggle to get out. This seemed evidently to be the case with many of the patients we had ; though in some the worms seemed to have given rise to the fever, which the bad state of the patient's humours, or the infected air of hospitals, determined to be of this kind. In many, the fever lessened, or went off entirely, soon after ; and they were no more affected with symptoms of worms. But some notwithstanding were subject to frequent sickness, pain of the stomach, and uneasiness in the bowels, and discharged some worms from time to time. Others had frequent relapses into fevers, which seemed to be owing to the irritation of these insects.

It is no wonder that worms of the round kind should be productive of troublesome symptoms, and occasion these relapses ; since we know that they have sometimes perforated the intestines, and been found in the cavity of the abdomen †.

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† See Hoffinan's works, vol. iii. chap. x. River. Observ. commun. Obs. 13. of Observations found in a Library. Bonetus's Sepulchret. Anatom. tom. ii. Gualther van Doeveren's Inaugural Dissertation de Vermibus Intestinalibus, published at Leyden, 1753 ; and Lancis's works ; for cases where
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As soon as we observed a patient to be troubled with worms, if his present situation did not prevent it, we gave twenty-five or thirty grains of rhubarb, with five or six grains of calomel; and if there was much sickness, we likewise gave an emetic; which, in more than one case, brought up two or three worms of the round kind, and gave great relief. But where the fever was violent, we were obliged to neglect this symptom of worms for the present; and when the fever was over, if there still remained any symptoms of worms, we gave the purgative medicine once or oftener, and in the intervals gave the pulvis stanni, or an infusion of camomile flowers; and in some cases, oily medicines. By these means most of the patients got well and recovered their health, and seemed to be freed, at least for the present, from these troublesome insects; though a few continued to complain of sickness, and other symptoms of worms, for some time afterwards.

What was the cause of the army's being so much troubled with worms of the round kind,

the internal coats of the stomach, and intestines, have been eroded, and all the coats perforated by worms of the round kind.

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is not easy to ascertain; unless it was owing to the great quantity of crude vegetables, and fruits, which the soldiers eat in the course of the summer and autumn, and to the bad water they were often obliged to drink.

3. *Of a dysuria.*

In the malignant fever at Paderborn, many complained of a dysuria, and some of a suppression of urine, especially towards the decline of the fever; and others, of a scalding and pain in making water, though they had no venereal complaint. These symptoms appeared in other places, but not near so frequently as at Paderborn. Decoctions of gum Arabic, with some of the spiritus nitri dulcis, and oily mixtures, and opiates, commonly gave immediate relief, and soon removed this complaint.

4. *Of deafness.*

One of the first salutary symptoms which most generally appeared in those who recovered, was a dullness of hearing, or deafness*; which

* Riverius tells us, that, according to Hippocrates's doctrine, deafness is a very dangerous symptom in the beginning of

which came on about the height of the fever, and continued a longer or shorter time, generally till the fever was entirely gone; and sometimes for a considerable time afterwards. For the most part we did nothing for this complaint, and it went off as the

of acute disorders, though it be a good omen, and portends health, when it does not appear till the height of fevers, especially those of a malignant kind; and adds, that he himself has a thousand times observed, that those labouring under this fever have recovered, when this symptom of deafness came on at the height (in statu) though the other symptoms threatened much danger. *Prax. Medic. lib. XVII. sect. iii. cap. i. p. 451.*

This symptom of deafness occurs in other fevers as well as in this, and often proves a good symptom in them likewise, as I have frequently observed. Two remarkable examples of which I had under my care in St. George's hospital, in the year 1759. On the 17th of January 1759, James Donaldson, a young man of nineteen years of age, was admitted into the hospital for a fever, attended with a stupor and a delirium, a parched dry tongue, and other symptoms of a fever of the inflammatory kind, for which he had been bled, and used other evacuations. On the 19th, after the application of a blister, he was seized with almost an entire deafness; after which, all his other symptoms became milder, and he mended daily, and was entirely free from the fever by the 30th. On the 10th of April 1759, a youth, John Young, fifteen years of age, was admitted into the same hospital for a fever, which had already continued fourteen days. His speech was affected, and he had entirely lost the use of his limbs, was delirious, and had other bad symptoms. On the 12th, his hearing became exceedingly dull, and he recovered daily afterwards, and was discharged, cured, the 2d of May, having recovered the use of his legs as well as got free of the fever.

patient recovered his strength. When it continued long, blisters applied behind the ears, or on the neck, and washing the meatus auditorius with the emollient decoction, in which a small quantity of soap was dissolved, proved of service.

5. *Of swelling of the parotid glands.*

Swelling of the parotid glands appeared in many subjects, towards the decline of the fever, which came to suppuration, and proved critical. In two only, out of those I attended while in Germany, they came on early in the Fever, but did not suppurate. Both patients died; all the rest recovered, except one old man, an invalid at Bremen; who, after having one swelling appear on the right side, which came to suppuration, and seemed critical, relapsed into the fever; and another formed on the other side, which came likewise to suppuration, and the fever ceased, after having reduced him very low; but the great discharge from the sores wasted him gradually, and he died hectic in about a month after the fever had left him †.

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† But although these parotid swellings were in general so favourable with us, we are not to imagine that this will always
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As soon as these swellings of the parotid glands appeared, we endeavoured to bring them

be the case: for Riverius, though he speaks of these swellings proving for the most part critical; yet he tells us, that, in the year 1623, this fever was epidemic at Montpelier, and that almost one half of the sick died; and particularly, that most of those who had swellings of the parotid glands appearing about the 9th or 11th day, were carried off within two days of their appearance. Having attended several who died from the swellings not coming to suppuration, he began to consider in his own mind, what might be the cause of their death, and concluded, that it was owing to there being a greater quantity of morbid matter in the blood than the part was able to contain, and that evacuations by bleeding and purging were the only remedies which were likely to give relief; and therefore, in the first case of this kind, in which he was afterwards consulted, he ordered three ounces of blood to be taken away, notwithstanding the patient was so low that the surgeon was afraid he would have died in the operation: the pulse rose on bleeding, and he ordered four ounces more to be taken in three or four hours afterwards; the pulse rose still more, and he ordered a dose of senna and rhubarb to be taken next day, and the patient recovered. And he adds, that all those who were treated in this manner got well. *Prax. Med. lib. XVII. sect. iii. cap. 1.*

And M. Dezon, in treating of ardent malignant fevers, accompanied with a delirium and inflammation of the liver which were frequent among the French troops in Italy in October 1734, observes, that towards the end of these fevers, as well as of the fevers accompanied with a lethargy, it happened often that the parotid glands swelled; that these swellings often resolved with advantage to the sick; but if unluckily the matter was too thick and viscid to resolve, and the tumors came to suppuration, that commonly the sick fell victims to the disorder, and died in the long run; and sometimes they were suffocated by the tumors compressing the jugular veins.

them forward to suppuration, by the application of emollient cataplasms, or of gum-mous plasters; and had them opened as soon as a fluctuation of matter was to be felt, and afterwards treated them as common abscesses. Riverius * very justly observes, that when such tumors increase in such a manner as to endanger suffocation, they ought to be opened before they come to maturation; and sir John Pringle † desires us not to wait for a fluctuation of matter, but to open the abscess as soon as it can be supposed to have formed. However, where there was no immediate threatening danger I have always found it better to let them come fully to suppuration, than to open them sooner.

6. *Of buboes.*

In February 1761, three patients in the decline of this fever had buboes formed in the groin, which proved critical. At first, on observing them, I suspected them to be ve-

Lettres sur les principales Maladies qui ont regne dans les Hopitaux de l'Armée de Roy, 1734. Lettre II. p. 33, and 34.

* Ibid.

† Pringle's Observations on the Diseases of the Army, Part III. chap. vii.

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neral ; but on examining the patients, they obstinately denied their having any reason to suspect any such cause ; and the favourable manner in which they healed without the appearance of any other venereal symptom, made me believe what they asserted to be true ; especially as such people are not shy in owning complaints of that kind. The first patient I saw who had a bubo in the decline of one of these malignant fevers, was a woman, wife to a soldier of the thirty-seventh regiment of foot ; she had a child at her breast, and her husband was living with her at the time she was taken ill of the fever, and neither of them had the least venereal complaint. In a few days afterwards, two soldiers in other hospitals, towards the decline of very bad petechial fevers, had likewise buboes formed in the groin, without any suspicion of a venereal taint. Except in these three, I did not see any critical buboes appear in this fever while I was with the troops in Germany ; though Mr. Lovet, who served as a mate to the hospitals, and who was at Hoxter, while I was at Paderborn, told me, that, in the beginning of the year 1761, they had several men in the hospital there ill of

this fever, who had critical buboes formed in the groins and armpits*.

Since my return from Germany I have met with but two cases of buboes that were not venereal, which came after bad fevers; the one in St. George's hospital, the other in the general hospital at Cox-heath in October 1779; though several able practitioners have told me, that they have met with them in our naval and military hospitals where putrid fevers have been frequent.

7. *Of swellings of the testicles.*

About the same time that these buboes appeared, several towards the decline of this fever complained of a pain all along the spermatic chord; and soon after a swelling of the testicle appeared†. However, this complaint

* This symptom of buboes is taken notice of by authors, but does not seem to be so frequent as many of them would make us believe. Neither Dr. Huxham nor sir John Pringle mention their having seen such buboes; and Dr. Lind says, that he never saw them till the beginning of the year 1763.

† Hippocrates takes notice of swellings of the testicles in fevers. He tells us, that a man from Alcibiades had his left testicle swell before the crisis of a fever. See his second book on Epidemics, sect. ii. And he mentions this symptom as a crisis in the ardent fever. See his Book on Crises, sect. xi.—

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plaint was not peculiar to those who had the fever ; for others recovering from fluxes, and other disorders, were likewise affected with such swellings. I did not observe any symptom of this kind in fevers while I was with the troops in Germany, except in January, February, March, and April 1761. By bleeding, and applying emollient fomentations and cataplasms, and bathing the parts with spiritus Mindereri on the first attack of the pain, the swelling of the testicle was prevented ; but where no mention was made of this pain till the swelling had already begun, it commonly ended in a suppuration of the scrotum or testicle, which healed very kindly. We had no reason to suspect any venereal taint in any of them.

In the year 1766, the late Mr. Thomas Allen, who was one of the surgeons to his majesty's navy, and a very worthy sensible man, told me, that while he was surgeon to the Greenwich man of war, in the year 1739, a number of men were attacked with swellings of the testicles at the crisis of a malig-

And Dr. Antonio Lizzari, in a treatise which he published on the Acute Diseases which were frequent at Venice, and all over Italy, in the years 1761, 1762, tells us, that abscesses of the scrotum and testicles frequently followed the measles.

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nant fever, which was frequent aboard the ship; that these swellings were sometimes very large, and that there was not the least suspicion of a venereal taint. He observed to me at the same time, that although he had been on service in the royal navy for upwards of twenty-seven years, and had frequently been on board of ships where the malignant fever was rife, yet that, except in the year mentioned, he had never seen this symptom of swelling of the testicles in fevers.—And Dr. George Monro, one of the physicians to the troops in North America during the late war, told me, that he had frequently seen such swellings of the testicles in the decline of malignant fevers; that they were sometimes very large and painful, but seldom came to suppuration.

8. *Of inflammations of the eyes.*

Many, while recovering from this fever, were seized with an ophthalmia, or inflammation of the eye; for the most part of one eye only, sometimes of both. When the patients were strong, they were blooded, and had blisters applied behind the ears; and sometimes, where the pain was great, had poultices of bread

bread and milk applied to the inflamed eye ; which, with the assistance of some cooling physic, commonly removed this complaint ; though in some obstinate cases we were obliged to repeat the evacuations, to apply leeches to the temples ; and after the acute state of the disorder was passed, to order the eye to be washed frequently with the collyrium vitriolicum, or collyrium saturninum, before we got the better of this complaint. However, it ought to be observed, that if these astringent collyria were used too soon, they did hurt. When these ophthalmias were neglected in the beginning, the inflammation frequently rose to a great height, and left an obscurity or film over the cornea, which remained an impediment to the sight not to be removed.

9. *Of mortifications of the toes, &c.*

Towards the decline of these fevers, and very often during the course of them, many complained of pains in their feet and toes, which sometimes ended in mortifications, especially where the patients lay in very cold wards. For the most part, the mortification extended no farther than the ends of the toes, though
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in some it spread over the feet, and in two or three advanced up the leg. Several lost one or more toes; and in February 1761, one man lost half of each foot; another lost both feet, and part of each leg. Both got the better of the fever, though the man who lost both feet languished a long time afterwards. These pains of the feet and toes, and the mortifications which followed, were for the most part owing to the patients being exposed to too much cold while they were very weak, the circulation languid, and the juices vitiated by a putrid distemper; by which means the vessels were rendered incapable of carrying on the circulation in their extreme branches.

These pains and mortifications of the feet and toes were not confined to those who were brought low by malignant fevers; for, during the very hard frost in the beginning of the year 1763, many of the patients who lay in very large open wards in the hospital at Osnabrug, were affected in the same way. One man had both feet, and part of each leg, completely mortified, and died in about nine days after the first appearance of the mortification. One lost half of one foot, and some toes of the other; and the third lost the first joint

joint of some of his toes, and the ends of others.

As soon as the sick began to complain of these pains of the toes and feet, I found the best remedy to be, the bathing of the feet in warm water, or in warm aromatic fomentations ; and, after keeping the feet for some time in these warm liquors, to dry them well, and then rub them with the linimentum saponaceum, or linimentum volatile, and wrap them up in flannel. And if ever any lividness or redness appeared on the parts, we gave plentifully of the cortex and cordials, if not contra-indicated by the other symptoms. When vesicles arose on the part and a gangrene formed, we directed the parts to be scarified, and proper dressings to be applied, while warm aromatic fomentations and cataplasms were used.

In January 1762, one patient, ill of the petechial fever at Bremen, had a lividness and blackness, threatening a mortification, which appeared at the end of his nose. I expected for some days, that, if he recovered, he would lose part of his nose ; but by giving him large and repeated doses of the cortex and confectio cardiaca, in a Mindereri mixture, and allowing him a free use of wine, its farther

ther progress was prevented ; and as the patient got clear of the fever, the nose recovered its natural colour, and only the scarf skin peeled off from the end of it.

When the fever continued long, and reduced the patients low, it was very common for the back, and parts on which the weight of the body rested, to mortify. As soon as any thing of this kind was observed, we ordered such parts to be covered with proper dressings, and gave the bark and cordials freely ; and took care to make the patient change his posture ; and by pillows prevented as much as possible the weight of the body from resting on that part. By this treatment, many recovered, where the fever was on the decline, and the strength not too much exhausted ; even though a very large surface of the skin had mortified ; but where the patients were very low, and the fever still continued, or where it was complicated with a flux, which kept them perpetually nasty, and exhausted the strength, it generally proved fatal.

10. *Of œdematous swellings of the legs, &c.*

Patients, who were reduced very low by this fever, or by repeated relapses, were sub-
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ject to œdematous swellings; especially of the feet, towards the evening, after sitting up all the day. These swellings generally went away as the sick recovered their strength; but in some cases they continued obstinate, and ascended towards the thighs; and in some spread all over the body, and terminated in an universal anasarca.

When these swellings were recent, and confined to the feet and legs, commonly the bark joined to the lixivial salts, or the oxymel of squills, or other diuretics, and a purgative once or twice a week, removed them. In some, an infusion of horse-radish had a good effect; in others, sweats brought out by means of Dover's powder, or of the guttæ antimoniales anodynæ.

Sometimes these swellings were very obstinate, and resisted the force of all internal remedies. In such cases, punctures made in the feet, or lower part of the legs, which furnished a drain for the water, had a good effect. Blisters applied to the legs were of service to some. When the punctures were made, or the blisters applied, before the patient's strength was exhausted, provided that he laboured under no other disorder but these œdematous swellings, which proceeded from
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weakness, I never observed any bad effects from them; though I used them both repeatedly in a variety of cases. But if the patient was very weak; or had a hectic fever or purging; or other disorders, and the œdematous swellings large; then oftentimes the great discharge exhausted his strength, and a gangrene and death were the consequence.

One of the most remarkable instances of the good effects of blisters, was in the case of a soldier at Paderborn. Thomas Hope, of the second regiment of foot guards, after a fever of this kind, was swelled all over, especially about the face and neck, and had a difficulty of breathing: after having tried variety of medicines for his complaint, without any effect, he had a large blister applied to his back, and took the cortex in a mixture, with the oxymel of squills. As soon as the blister began to discharge, the swellings decreased; and were afterwards entirely removed by the help of one or two doses of physic, and the continued use of the medicines before prescribed. Three other men in the hospital at Osnabrug, in May 1761, having œdematous swellings of the feet and legs, which yielded to no internal remedies, had

had blisters applied to their legs, used the cortex, with the lixivial salts, two or three times a day, and a purge every fourth day; which removed the swellings in a short time.

11. Of hæmorrhages.

Some of the soldiers, who had repeated hospital-fevers, had their blood so much broke down, as to be subject to profuse hæmorrhages from the nose; and some of them passed blood likewise, by stool; which reduced them to a very low state, sometimes attended with imminent danger. In such cases we found nothing to answer so well as to give freely of the bark; to acidulate their drinks with the spiritus vitrioli; to allow them as much red wine as their strength and present circumstances could bear; and at the same time to support the patient's strength by a mild diet, of light digestion; such as water or rice gruel, panada, weak broth, and the like. When there was a tendency to a diarrhœa, we were obliged to add some of the electarium diascordii to the cortex, and frequently to give an opiate in the evening. One case, where this method of cure had a very remarkable good effect, I had under my care at Pa-

U derborn.

derborn. A soldier who lay in one of the lower wards of the Jesuit's hospital, after a malignant fever, attended with a flux, used to bleed at the nose, to four, five, or six ounces at a time; and once or twice lost near a pint of blood, of a dark colour, very thin and watery, and of so loose a texture, that the grumous part scarcely coagulated. This evacuation brought him so low, that he could scarce turn himself in bed; and his pulse might be said rather to flutter than beat: by the continued use of the bark, and of cordials, and drinks acidulated with spiritus vi-trioli, and some spoonfuls of mulled red wine every two or three hours, he was restored to health and strength. The only accident which happened during the cure, was a threatening of a looseness, and the return of his flux; which, however, was stopt by a dose of the tinctura rhei; by joining some of the electarium diascordii with the bark, and giving an opiate in the evening.

S E C T.

S E C T. VII.

Of the preventative method of cure.

IN times when malignant fevers were frequent in hospitals, or epidemical, it has been alledged, that by a due care, on the first appearance of the symptoms, before the fever was formed, that their farther progress has been prevented; I have had no experience of this myself, as the disorder has been generally so far advanced before I saw the sick, that no remedies had any effect in preventing its progress; though I have seen many cases where emptying the first passages thoroughly very early in the disorder, seemed to shorten such fevers greatly. However, as many physicians have affirmed that they have seen remarkable good effects from the methods they used, I shall here add, by way of an Appendix to this chapter, an account of some of the principal means which have been recommended.

Mindererus * advises putting soldiers to bed as soon as the signs of infection appear, and

* See English translation of Dr. Mindererus's *Medicina Militaris*, chap. iv. p. 31, &c. published at London, 1674.

sweating them by giving them the size of two hazel nuts of treacle, dissolved in common vinegar, or vinegar in which rosemary, lavender, rue, and other herbs have been infused.

Riverius † mentions a woman who cured four of her children, two boys and two girls, after the first symptoms of the plague had appeared, by putting a feather dipped in oil into their throats, which made them throw up a great quantity of yellow, pituitous, porraceous matter.

Dr. Hoffman ‡, in treating of petechial fevers, mentions three cases where the progress of the fever was put a stop to by taking a vomit, and afterwards a mild diaphoretic, on the appearance of the first symptoms of this fever; and he adds, that he has often observed these remedies to have this effect. He seems to think, that in cases where this fever is communicated by contagion, that the malignant effluvia are first mixed with the saliva, and the mucus of the fauces and nose, before they effect the blood; and that vomits given

† See Lazar. River. Opera Med. p. 570. Observat. commun. ab Ad. Sim. Jacoz, Observ. 19.

‡ See Hoffman Oper. tom. ii. sect. 1. cap. xi. Observ. vii.

in time discharge these infected juices before they are taken up into the circulation.—He recommends likewise in such cases, plentiful dilution with mild liquors; and says, he knew a practitioner who had great success, and often cured his patients in a few days by making them drink plentifully of whey made by turning cow's milk with lemon-juice.—And in his epicrisis to his account of the petechial fever, which was frequent in the principality of Minden, in the year 1683*, he tells us, that in cases where the stomach was loaded in the beginning, the cure was much easier effected if a medicine was immediately given which both emptied the stomach and bowels; such as a decoction of manna, with half a drachm or a drachm of ipocacoanha; or an infusion of manna in wine, with two grains of tartar emetic dissolved in it; and immediately after its operation, some of the bezoardic and mild diaphoretic medicines.

Sir John Pringle† advises giving a vomit by way of prevention, on the first appearance of the symptoms, and at night to force a sweat, by giving a drachm of theriaca, with

* See Hoffman, p. 89.

† Observations on the Diseases of the Army, Part ii. chap. vii. sect. 5.

ten grains of the sal vol. c. cervi, and some draughts of vinegar-whey ; and to repeat the same the following night ; and says, he has often seen those symptoms removed, which he apprehended to be fore-runners of this fever received by contagion ; but previous to vomits or sweats, he advises if the person is plethoric to take away some blood.

Dr. Lind † says, “ To all who are supposed
 “ to be infected by fevers, during the stage
 “ of rigors, a gentle vomit is immediately
 “ to be exhibited before the fever be formed,
 “ and before the fullness or hardness of the
 “ pulse renders its operation dangerous. If
 “ the vomit be delayed too long, and especially if bleeding must precede it, the
 “ most certain and favourable opportunity
 “ of procuring safety for the patient is past.
 “ He says, he found this method equally
 “ serviceable in preventing relapses, when
 “ it is given at the return of the shiverings,
 “ Let me add, that a loose stool or two
 “ should at this time be procured, either by
 “ means of the emetic or of clysters.

“ The vomit administered was generally
 “ very gentle, and seldom exceeded from six

† See his second paper on fevers, p. 66, published in 1763.

“ to ten grains of ipocacoanha. The pa-
 “ tient should afterwards when put to bed,
 “ take a sweating and quieting draught, con-
 “ taining five grains of salt of hartshorn,
 “ and from fifteen to twenty drops of the-
 “ baic tincture.—At other times we have
 “ given five grains of camphor every four
 “ hours, with large draughts of vinegar-
 “ whey. Eight persons in ten got quite
 “ well by this treatment.”

Dr. Mezerey * says he has preserved him-
 self and others from putrid malignant fevers,
 by the same means as Dr. Chicoyneau, first
 physician to the king of France, had used for
 preserving people from the plague after the
 appearance of what were judged to be the
 first symptoms of this most terrible distem-
 per ; which were as follows.

As soon as any person found a want of ap-
 petite, and a bad taste in the mouth, attend-
 ed with a foul tongue, which were judged to
 be the first symptoms of some putrid distem-
 per, he was desired to live on a very strict
 diet, and to take two or three times a day a
 glass of tar water, or of an infusion of baum,

* See his account of the diseases of the army called, *La*
Medicine d'Armée, vol. i. p. 144, &c. published at Paris,
 1754.

or some other aromatic plant, and to mix it with a large quantity of water; and to have daily several emollient clysters administered; and afterwards clysters which were purgative, in order to remove the costiveness that generally attended this state of the disorder, and to bring away the very thick fetid excrements, with which the bowels were commonly overloaded; and at the same time it was recommended to avoid too sedentary a life, to breathe a free air, and to endeavour to dissipate fear.

By these means the threatening symptoms were often removed; but if they still remained after the second or third day, and the patients were without fever, or thirst, or much pain of the head, breast, or belly, a large glassful of the infusion of senna, called the royal ptisan, or of some other purgative medicine was given; and after two hours and a half, or three hours, a glass of a ptisan made with liquorice root, dandelion, and bread, in each quart of which five or six grains of the tartar stibiatus was dissolved, was given every quarter of an hour, until the sick vomited some glassfuls of bile; if this medicine, or some of the ipecacuanha did not vomit them sufficiently, a
dose

dose of some stronger emetic was administered.

The purgative medicine taken before the emetic generally operated freely, and discharged by stool a prodigious quantity of thick, and often brown, or black, and always very fetid excrement; and the sick found themselves cured so soon as their stools became clear, bilious, or watery, and had little or no bad smell. If the first dose of physic did not produce this effect, they took another of the same kind, or if necessary, a stronger one the same day, or at latest the next day; and they continued the use of these medicines, till their stools became clear, and had lost in a great measure their fetid smell; during the operation they were desired to drink plentifully of very weak broth, or of some mild ptisan, or of tea, or of a decoction of bread, or hydromel, if they were not very hot or thirsty, and if they were without pain, fever, or fullness of the pulse; if these symptoms supervened, some speedy and copious bleedings were necessary, to dispose the sick to purge freely both upwards and downwards, as we shall have occasion to observe hereafter.

He

He says he has preserved many, and himself, more than fifty times from putrid fevers by these means, and that he always found himself refreshed and active after the operation of the purge, and that his strength returned on eating a mess of some good pottage, and drinking a few glasses of wine.— He observes, that a long sleep, or a sweat, or even a moisture brought on the skin, is in danger of making the virus, or seeds of the fever enter the blood, and therefore that one ought to avoid loading the sick with bed-cloaths, or making the chamber hot, and sleeping long, till the purgations and emetic medicine have operated.

CHAP. II.

Of the putrid ulcerated sore throat.

SECT. I.

Of the symptoms.

THIS ulcerated sore throat* is always attended with a low putrid fever of the petechial kind; it belongs to the same class

* This species of ulcerated sore throat seems to have been described, by Hippocrates, Aretæus, Aetius, and other ancient authors,

class of diseases with it, and in many respects requires to be treated in the same manner.

I did not once meet with this disorder while I was with the troops in Germany; but it occurred frequently in the regimental hospitals at Cox-heath in summers 1778 and 1779; and it has been every year more or less frequent in London for these thirty years past.

This fever commonly begins with cold shivering and hot fits, alternately succeeding each other, till at length the heat becomes constant and intense, accompanied with head-ach, heat, and soreness of the throat, stiffness of the neck, and often with sickness, attended with a vomiting or purging, or with both, which for the most part go off the first or second day, though sometimes I have seen the purging continue longer.

In the evening, there is almost always an exacerbation of fever; the sick become hot and restless, and often a slight delirium comes

authors, and to have been likewise mentioned by several of the Italian and Spanish physicians, but was either not known, or mistaken for another disease in this country, till about the year 1739, when it raged with great violence; since which Dr. Fothergill, Dr. Huxham, and others, have wrote particularly on this subject, and given an accurate description of the disease, and many useful remarks on the method of cure.

on,

on, even on the first night, and frequently on the second; and towards the morning a sweat, more or less profuse, breaks out which carries off the delirium, and the patients are easier for some hours.

Soon after the first attack, the face looks red and swelled; and often on the second day the face, neck, breast, and hands, become of a deep erysipelatous colour, accompanied with a sensible tumefaction, and interspersed with a number of small, red pimples, or rather petechial efflorescences; and for the most part as the skin acquires this colour, the sickness goes off.

The parotid glands generally swell, grow hard and painful to the touch; and if the disease be violent, the neck and throat are surrounded with a large œdematous tumor.

The urine is commonly pale in the beginning, but turns of a higher colour as the disease advances; and at the crisis becomes turbid, and deposits a farinaceous sediment.

The pulse for the most is quick and low, and beats in adults from 100 to 130 times in a minute; and if blood be taken away from the patient it appears florid, loose, and dissolved; but in some very few cases I have found the pulse full, hard, and strong in the
begin-

beginning, and the blood taken away has been of a firm texture, and thrown up a strong inflammatory buff.

S E C T. II.

Of the appearances in the throat.

IF the mouth and throat be examined on the first day, the tonsils, velum pendulum palati, uvula, and parts about the throat appear of a florid red colour, and the tonsils are for the most part, though not always swelled, appear of the size of mulberries, and seem in a manner to close up the passage down into the throat; though the difficulty of breathing and of swallowing is often not near so great, as might be expected from the tumefaction of the parts; and on the first or second day pale white spots surrounded with a florid red are to be observed on the tonsils, or in the angles above them, which increase in number and size according as the disorder is more or less violent; and frequently those white spots appear like so many little abscesses containing a fully digested matter ready to be discharged.

As the disease advances, these white spots become more opake, and on examination

are

are found to be sloughs not formed of any foreign matter, spread on the parts affected, as a crust or coat, but real mortifications of the parts themselves; since whenever they are separated, so much of the substance is lost as is equal to their bulk, and they leave an ulcer of an equal depth behind: and hence it is that patients who have had large sloughs separated, sometimes speak through the nose for some time after, as if they had lost their palates by the venereal disorder, though they afterwards recover their voice.

From under these sloughs, a thin, fetid, sharp ichor is discharged, which is sometimes so acrid, as to excoriate the parts about the mouth: and it is not improbable but that the sickness, which sometimes oppresses the patient so much in this disease, is owing to part of this matter being swallowed along with the food or spittle.

All the parts about the fauces are liable to these sloughs and ulcerations, but the tonsils, velum pendulum, and uvula, are the parts most frequently affected; and I have observed the whole throat covered with them, so far down as I could see.—And we are told that the nose has sometimes been covered

vered with sloughs of this kind in children.

S E C T. III.

Of what has been observed in the bodies of those who have died.

AS I never saw but one person, a child, who died of this disorder, whose body was not allowed to be opened, I can say nothing of the appearances observed in dead bodies, from my own observation. Zaffius tells us, that he found the whole internal surface of the trachea covered with sloughs * as far down as the lungs; and Le Cat † and Lieutaud ‡, that they have found both the stomach and intestines affected with the disorder.

S E C T. IV.

Of the termination of the disorder, and seasons in which it is most frequent.

THE fever increases in this disorder till the 3d, 4th, or 5th days, sometimes till the 7th; and where the disorder is

* Zaffii Observ. Med. de Nitro, p. 42.

† Le Cat in Philosoph. Transact. vol. xlix. art. 15.

‡ Lieutaud Precis de la Medicine, edit. 2. p. 518.

very

very violent, there is seldom a perfect crisis till the 11th.

When the disorder is slight, the febrile symptoms are mild, and the exulcerations and sloughs are superficial, and the patient gets well in a few days.

But where the disorder is violent, the fever runs high, attended with an anxiety, and difficulty of breathing, a prostration of strength, a strong delirium in the nights; and sometimes with fainting fits, and bleedings at the nose and mouth, and hiccup. — And where it ends fatally, the patients sink, are attacked with twitchings of the tendons, and hiccup, and at last either fall into convulsions, or become comatose, or lethargic, till they be quite in the agonies of death.

It seems to be infectious, especially among children; for if it breaks out in a family, it commonly attacks several, if not all the children, if the healthy are not kept apart from the sick; and such adults as are frequently with them, and receive their breath near at hand, are often infected with it.

This sort of sore throat is to be met with at all times of the year, but more particularly in autumn, and the beginning of winter; and it appears from the various accounts

counts we have of it, that in some years it has been extremely violent, and proved fatal to many, especially to children; but that in other years it has been mild, and few or none have died of it.

It attacks people of all ages, but more frequently children and young people than adults; and those of a lax habit more than the robust and strong: and many more children have died of it than grown people.

S E C T. V.

Of the nature of the disorder, and method of cure.

PHYSICIANS have differed much with regard to the treatment of this disorder. Some have recommended evacuations, and to pursue out the antiphlogistic method of cure; while others have condemned the use of bleeding and of purging, and of all antiphlogistic remedies, and have advised to give only the *confectio cardica*, and other hot medicines.

But, as I observed before, the fever attending this disorder appears to me to be of the same kind as the petechial fever just now

treated of, and, like it, is observed to be sometimes more, and sometimes less malignant, and at one time to be of a very highly putrid nature, and at other times to be more mild; and sometimes to be attended with fizy blood, and other inflammatory symptoms, in the beginning; I therefore think, that no certain and invariable rules can be laid down for the treatment of this disorder, and that some variation must be made in the cure of each individual, according to the circumstances of the case; and the stronger the patient, the more fizy and the less dissolved the blood, the more cooling the regimen ought to be; and the greater the prostration of strength, the more the blood is dissolved; and the lower and quicker the pulse, the more cordials, the bark, wine, and acids are necessary.

In the beginning, if the patient is strong, and the pulse full and hard, attended with a difficulty of breathing, I have always found taking away a small quantity of blood to be of service; and some years ago I saw two cases, where the inflammatory symptoms remained so strong after the first bleeding, that I was obliged to order the evacuation to be repeated, which moderated the fever, and gave an opportunity

opportunity of administering the bark, which removed the disorder.—And two years ago I was sent for, in the evening, to visit a young gentleman, who about two or three hours before, after a cold shivering fit, was seized with such a violent fever and delirium as I had never seen before in this disorder. On being spoke to, he gave distinct answers; but on being left to himself, talked incoherently, and seemed quite delirious. He complained much of a pain in his throat; and on looking into it, I saw that the tonsils, velum pendulum, and neighbouring parts, were all of a florid red colour, with several white specks on the tonsils, and knew immediately that his disorder was the putrid ulcerated sore throat; and notwithstanding, as his pulse was full, and beat 140 strokes in a minute; and the delirium run so high, I ordered ten ounces of blood to be taken from him immediately. This moderated the fever, and the delirium was gone before next morning, and he got well in eight or nine days, by following the common method of cure.

However, though the taking away a small quantity of blood, under the circumstances just mentioned, is generally of use, yet it ought to be observed, that we ought to be

cautious, and not be too free with the lancet in this sort of sore throat; for in this disorder, as well as in others of the putrid kind, free bleeding is in danger of sinking the patient, and doing mischief.

For the most part, the pulse is low and quick in the beginning, and bleeding had better be omitted; and commonly after the second or third day, in whatever way it has begun, the pulse comes to this state, and bleeding is seldom proper after this period.

If the sick complain of a nausea and vomiting in the beginning, it is generally of great service to make them puke a little, by making them drink freely of camomile tea, or of warm water, after taking a few grains of ipecacoanha; for this clears the stomach of the bilious, acrid, or putrid humours, that occasioned the nausea, at the same time that it promotes a plentiful discharge from the glands about the throat. And if the patients be inclined to be costive, I have always found it to be of the greatest use, to make them take some mild opening medicine in the beginning; and afterwards, in the course of the disorder, to have laxative emollient clysters administered occasionally in the evenings, which generally cooled them, and lessened

sened that feverish heat and restlessness which comes on in the evening, and prevents their sleeping in the fore-part of the night.

If there is a purging in the beginning, which is troublesome, it is for the most part proper to give a few grains of ipecacoanha, and after its operation, to give a dose of some mild opening medicine, to clear the rest of the alimentary canal of the bilious and other acrimonious humours, which gave rise to this symptom; and at night to order some warm, cordial, anodyne medicine, to be taken, to allay the disturbances raised by the vomit and purge.

Several physicians have condemned the use of all opening medicines in this disorder, and have alledged, that instead of lessening, they have increased the violence of the symptoms; but in the many cases which I have attended in the course of these twenty-five years past, I never once saw the mild opening medicines, and laxative clysters, administered as here mentioned, do the least hurt, but on the contrary, to be often of the greatest service.

If the patient be strong and the pulse full for the first day or two, attended with a good deal of heat and fever, I have always found

it to be the best method to order only the common saline draughts, with some gentle cordial to be given during that time.—But so soon as the stomach and bowels are cleared of acrimonious humors, and the nausea and vomiting cease, and the pulse has become soft and low, and the sloughs and ulcers appear in the throat, the Peruvian bark, joined with cordials, ought to be given with a liberal hand ; for after a great deal of experience I am convinced with Dr. Wall, that this bark is the most efficacious remedy that has ever been administered in this complaint ; indeed, it is often necessary to join the use of cordials, wine, and acids to it ; and where, in the course of the disorder, a purging is threatened, that after washing the great guts with some mild anodyne clyster, it is proper to add some drops of the tinctura thebaica, or some of the electarium e scordio, or some mild astringent medicine to it *.

If

* The bark may be administered in various forms, either in decoction or in substance, or it may be given in red wine.—To children, and to many adults, it may be given in milk, sweetened with sugar, which covers the taste of the bark, and makes it more agreeable to many palates than in any other form.—To young children, who cannot be prevailed upon to swallow it in any form, it may be administered to the quantity of two or three drachms in an anodyne clyster,

If the bark should not agree, which sometimes, though rarely happens, medicines, more or less cordial, and wine ought to be given in its place.

If the pulse should be very weak, and the patient low, and attacked with fainting fits, the strength of the cordials, and the quantity of wine ought to be increased, and blisters applied to the back or arms. With respect to the use of blisters in this complaint, it ought to be observed, that if they be applied early in the disorder, while the pulse is yet full and quick, and the patient strong, I have always remarked, that they rather increase than lessen the febrile symptoms, but that when the patient is in danger of sinking and falling into fainting fits, they are very useful remedies.

During the whole course of this disorder, it is of the greatest service for the patient to breathe a pure, free, and often-renewed air; the diet ought to be of the moist vegetable kind—the drink of the acidulous nature, and more or less wine given, according as the patient is more or less sunk; and that where

ter, two or three times a day; and it may be administered in the same form, but in larger quantity to adults, who cannot swallow easily on account of the swelling in the throat.

the bowels will bear it, that ripe fruit proves a most pleasant and grateful cordial.

S E C T. VI.

Of the treatment of the sloughs and ulcers in the throat.

FROM the time the sloughs and ulcers appear in the throat, the patient ought to gargle frequently with some mild, acid, detergent liquor, to wash away the putrid sanious matter that is constantly discharged from the throat; and he ought to be particularly careful to do this before he drinks or eats any thing; for if this is not done, and these acrid humors are not washed away, they are apt to spread the infection by irritating and eroding the neighbouring parts; and if swallowed, are apt to create a nausea and vomiting, or bring on a diarrhœa; and if absorbed, to encrease the heat, fever, and acrimony of the blood.

Where the patients are young children, or adults who cannot gargle on account of the violence of the disorder, the mouth and throat ought to be frequently washed, by throwing in the acidulous detergent gargles with a syringe.

So

So much depends upon the frequent use of these gargles, washes, and injections, that they cannot be too much recommended.

In some cases, the steams of such liquors made hot, received into the throat by means of an inverted funnel, or one of Mr. Mudge's inhalers, is of service; particularly where the parts about the top of the trachea arteria, which the gargles cannot reach, are affected.

Where the disorder is of a very putrid nature, it is sometimes of use to touch the sloughs and ulcers frequently, with some of the mel rosarum, acidulated with spirit of sea salt, by means of an armed probe.

Some people have attempted to remove the sloughs by force, but that has been generally attended with bad success, for new sloughs have soon regenerated and the ulcers become deeper.

In general, little more is requisite to the throat than to wash and gargle it frequently, as above recommended; for so soon as the violence of the fever is abated, and the disorder takes a favourable turn, the sloughs cast off, and the ulcerated parts fill up and heal.

C H A P. III.

OF THE DYSENTERY.

d **T**HE dysentery, or bloody flux, is a looseness accompanied with gripes and severe pains of the bowels, and a frequent discharge of thin excrement mixed with blood and mucus, and a tenesmus.

S E C T. I.

Of the causes of the dysentery.

γ **I**T arises from a variety of causes, but mostly from some of the following.—From moist putrid vapours—from an obstructed perspiration joined to a putrescent acrimony of the blood, or of the bile or other gastric liquors arising from heat and motion;—hence soldiers in camp, reapers, and other people, who work in the fields in the end of summer and in autumn, and who are exposed to all changes of weather through the day, and obliged often to lie on the ground in the night, are more exposed to this disorder than other people.—And hence in camps we observe, that the more hot and rainy a season is, and the more

more wet and marshy the ground is on which the troops are encamped, and the more the air is replete with putrid vapours, the more frequent and the more fatal is the dysentery in all climates, and more particularly so, in those situated under the torrid zone.

In Germany the dysentery generally began to appear soon after the army took the field ; and became frequent about the end of July, and continued so till the army went into winter-quarters ; and through the winter, many of those, who had this disorder in autumn, relapsed, upon returning to their duty ; or by drinking too freely of spirituous liquors, and being irregular in their living.

In camps it seems to arise principally from an obstructed perspiration caused by the men's lying in the field, and doing the necessary military duties in all sorts of weather ; at the same time that they are often exposed to the putrid steams of dead horses, of the privies, and of other corrupted animal or vegetable substances ; or to the unwholesome moist putrescent vapours of marshy or wet grounds, or pools of stagnating water in the neighbourhood, after their juices had been highly exalted by the heat of summer.

The

The dysentery has been long alledged to arise from such putrescent causes in camps during the heat of summer; for Ramazzini, in his chapter on camp-diseases, informs us, that Dr. G. Erric Barnstorff, physician to the duke of Brunswick, who served five campaigns with the Brunswick and Lunenburg troops in Hungary, told him, that the camp diseases, particularly the malignant fever and dysentery, took their rise from the troops remaining long encamped on the same ground, and being exposed to the corrupted steams of the bodies of dead men, horses, and other animals, which lay unburied; and of excrements, which were not covered with earth. Many have imputed the cause of this disorder to the eating of fruit in excess, because it generally appears about the middle of summer, the time the fruit begins to be in season, and continues through the autumn. But from later observations this should seem to be a vulgar error; for I did not see any soldier while I was with the army in Germany, who was attacked with the dysentery from this cause; though several who were recovering from the disorder, brought on relapses from eating quantities of raw unripe fruit,

fruit, while the stomach and bowels were yet weak, and had not recovered their tone. Nor have I ever heard any of the poor people who came in autumn to St. George's hospital for this complaint, alledge that it was brought on by eating [of fruit; but commonly say that it was occasioned by working in the fields, and being exposed to causes similar to those which produce it in camps. And both Hoffman and Degnerus have observed, that the dysentery is frequently epidemic among the people before any fruit can be got; and that often no dysentery is to be seen in years in which both fruit and greens are in great plenty.—And Degnerus says, that he, so far from believing the eating of fruit to be productive of the dysentery, had, during the whole time the dysentery was epidemic in the year 1736, eat fruit daily in moderate quantity, from a belief that the acid fermentation excited by it in the stomach and bowels, was a corrector of the sharp alkaliescent acrimony of the juices which gave rise to the disorder; and in the Act. Natur. Curcos. dec. 2. ann. x. Obs. 192, we are told, that when a bilious dysentery raged violently, grapes and must were found to be excellent antidyenteric remedies, and many
were

Fruit.

were cured by them * after other means had been tried without success.—Sir John Pringle † in his Observations on the Diseases of the Army tells us, that in the year 1743, this sickness began and raged before any fruit was in season, except strawberries, (which from their high price the men never tasted) and ended about the time the grapes were ripe; which growing in open vineyards were freely eat by every body. And Dr. Tissot ‡ says, that ripe fruit, especially the summer-fruits, are so far from being the cause of the disorder, that they are the great preservatives against it: adding, that in the years which the fruit is most plentiful, the dysentery is least frequent; and he relates several instances where the use of ripe grapes proved a cure for the disorder. Eleven people were attacked by the dysentery, nine eat fruit, and all recovered; the other two, a grandmother and child, from prejudice, eat none, and both died. A regiment of Swiss soldiers, in garrison in the south of France, had the dysentery very frequent among them. The

σ * Vide N. Degneri Histor. Med. Dysenteriaz, &c. an. 1736. p. 165.

† Observ. on the Diseases of the Army, part I. chap. iii.

‡ Avis au Peuple sur la Santé, § 320.

10. 266 of my edition. 1764. cap-

captains purchased some acres of a vineyard, and carried the sick soldiers to the field, and gave them the grapes to eat; and ordered the men in health to live upon them chiefly. After this not one person died, nor was any one seized with the distemper.—In an account of a treatise on the dysentery, published at Hamburgh in 1753, which was epidemical the year before, in August and September, we are told, that it did not proceed, as is commonly believed, from the eating of fruit; for it was observed, that those who eat fruit freely escaped better than those who abstained from it altogether*. And Dr. G. Zimmerman, physician to his majesty at Hanover, in a treatise on the dysentery, mentions that a child of eighteen months old was cured by eating grapes; and that one gentleman and others were cured by the same means. See English translation, p. 88.

* Comment. de Rebus in Hist. Nat. & Medicina Gestis, vol. ii. pars 4. sect. 5.

S E C T. II.

Of the times and places where this disorder was most frequent in Germany.

AT the time the petechial fever was frequent at Paderborn in January, February, and March 1761, the flux often accompanied it; and we had in the hospitals likewise a number of old cases of this kind, the remains of the preceding campaign about Warbourg; besides some men who had relapsed during the winter, and were sent to us when the troops marched, upon the winter expedition into the country of Hesse. In May and June, what fluxes we had at Osna-bruck, were the remaining old cases of the hospitals of Munster, Paderborn, Hoxter, and Nienburg. Some few recent ones were sent to Bilisfield about the end of June, and above 300 to Munster, in July and August. Those sent to Bremen, in November and December, had continued some time before they reached us; but a good many of the soldiers in the garrison were taken ill of this disorder, and sent immediately to the hospital. In the beginning of May 1762, we had but four ill of this complaint in the hospital I attended;

attended ; and there were not above six or seven, among the sick, sent down from the army in the middle of this month. In June there were but two sent to the hospital at Minden ; and not above ten among the sick sent to Natzungen in the beginning of July ; though towards the middle of this month they began to be more frequent ; and continued to be more so in August and September ; and in the hospital at Osnabruck we had not above five or six ill of this disorder, in December 1762, and in January, February, and March 1763.

S E C T. III.

Of the symptoms.

THE dysentery commonly began with sickness and gripes, succeeded by a purging, and attended with more or less fever. Very soon the gripes became more severe, attended with a flatulency in the bowels, and often with a tenesmus. The stools were composed of thin excrement and mucus, mixed with bile, and more or less blood : tho' sometimes no blood could be ob-

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served

served in them ; and then the soldiers used to say they had the white flux.

In order to distinguish what part of the intestines are affected by this disorder, Dr. Hoffman * has made the following remarks. —He says, if the sharp griping pains are at the navel, and the stools long of following the gripes, that the small guts are affected ; but if the griping pains affect the epigastric region, where the colon is situated, or the hypogastric or hypochondric regions, and the stools follow quickly the gripes, it is a sure sign that the great guts are principally concerned. And where there is a frequent needing to go to stool, and the patient passes only a very small quantity of sharp, virulent, viscid mucus, it is probable that there is an ulcer in the rectum.—Dr. Dezon †, in treating of the dysentery, says, that if the seat of the disease is in the small guts, that the griping pains are more acute, and resemble the pricking of needles, and that the stools

* Hoffman. Oper. tom. iii. p. 152. sect. 2. cap. vii.

† See Lettres sur les principales Maladies qui ont régné dans les Hospitaux de l'Armée de Roy dans les Années 1734, 5, 6. Publié a Paris, 1741. Lettre 8me, p. 200.

do not immediately follow the gripes, and that the blood which is discharged is intimately mixed with the stools; but if the inflammation is situated in the great guts, that the pain is not so acute, that the stools follow immediately the griping pains, and that the blood is not intimately mixed with them.

After eight, ten, or twelve days, if the disorder was not complicated with any other, there remained little or no fever, unless where some accident supervened; though in cases which terminated fatally, towards the latter end there came on a fever of a low malignant kind, attended with black fetid stools, lientery, hiccup, stupor, and other bad symptoms.

It often happened, that, after the dysentery had continued for some time, the sick complained for a day or two of severe gripes; and then discharged along with the stools little pieces of hardened excrements; at other times, tho' more rarely, little pieces of white stuff like tallow or suet: frequently small filaments, and little pieces of membranes, were found floating in the stools; and it was very common for the sick to vomit up

worms of the round kind, or to discharge them by stool*.

In the course of the disorder, the men often complained of a violent pain of the rectum, near the fundament, which was most

7 • Most authors, who treat of the dysentery, mention this symptom of worms; and Dr. Huxham tells us, that, in some seasons, he has seen round worms in the stools of most of the dysenteric patients. *De Aere*, vol. ii. p. 98.

Not only filaments, and pieces of membranes, have been passed by stool by dysenteric patients, but likewise, though rarely, membranaceous tubes some inches long, supposed to have been part of the villous coat of the intestines.—Dr. N. Chesneau gives the history of a woman labouring under a dysentery, who, on the fourth day of the disorder, passed a membranaceous tube, as long as the palm of the hand, like an entire piece of the true coat of the intestines; and on the 10th day another piece, four palms in length. *Vide N. Chesneau Observ. Medic. lib. iii. cap. vii. obs. iv.*—Tulpius gives the history of a man ill of the dysentery, who he says, passed within the week, the whole villous coat of the rectum, and recovered. *Vide Tulp. Observ. lib. iii. observ. 17.*—A like account we have in the 6th volume of the *Edinburgh Medical Essays*, by Dr. G. Simson; and many histories of the like kind are to be found related by medical authors.

It still remains a doubt among practitioners, whether the filaments, membranes, and membranaceous tubes, just mentioned, were really parts of the coats of the intestines, or if they were only membranes formed by indurated mucus, of the intestines. It seems probable that the greater part of them have been formed by mucus, but that sometimes they have been parts of the true coat of the intestines. For Dr. Simson, on examining the membranes evacuated in the case he describes, says, he discovered them to be of an organized structure, with distinct fibres, and vessels distributed every where through them.

excruciating

excruciating when they went to stool; it continued for some days, sometimes for a week or more; and then they passed more or less of a yellow pus with their excrements, and the violent pain ceased. Mr. A. Tough, one of the apothecaries to the military hospital in Germany, was the first who informed me that I should find pus mixed with the stools. On my mentioning a case of this kind, which had been relieved by bleeding, and clysters often repeated, he told me that he had observed it frequently at Gibraltar; and was at a loss to understand the nature of the symptom, till he observed the matter in the stools; which at once shewed him that it had been originally an acute inflammation of the part, and pointed out to him the proper method of cure.

Oftentimes the bilious and malignant fevers terminated in the dysentery; or were accompanied with it, when it might be looked upon as a symptom of these fevers.

SECT. IV.

Of the time of the duration of this disorder.

THE time of the duration of this disorder is very uncertain; sometimes when it is attended with much fever and

inflammation, it kills in a very short time; at other times it is cured by a few well-timed evacuations, in seven, eight, or ten days; at other times, especially when it is neglected in the beginning, it is protracted to weeks or months, and gradually wastes the patients, till nothing almost remains but skin and bone, and at last often hurries them to their graves. And those who do recover continue long weak, and their bowels extremely irritable; and they are subject to a return of the purging on catching the least cold, or on committing the least irregularity either in eating or drinking.

S E C T. V.

Of the appearances observed in the bodies of those who died of dysenteries.

THE colon and rectum, and likewise the stomach and small guts, have been found inflamed, with livid or gangrenous spots, in the bodies of those who have died of recent dysenteries; but the appearances we found after death in the bodies of some patients, who died of old fluxes at Bremen, were: In all of them the rectum was inflamed, and partly livid and black, and eroded,

eroded, especially the internal coat. In two the lower part of the colon was inflamed, and there were several livid spots on its great arcade. In one whose body was much emaciated, and who had been seized with a violent pain of the bowels two days before his death, all the small guts were red and inflamed; and in another there were livid gangrened spots on the stomach *.

Since

* From the accounts we have in authors, of the dissection of the bodies of persons who died of the dysentery, it appears, that there is no part of the alimentary canal which has not some time or other been found inflamed, or in a state of suppuration or gangrene; and the liver, spleen, and other viscera, have likewise been found diseased, but the rectum and colon have almost in all been more or less affected. In the year 1748, two days after the patient's death, I had the following account from the late Dr. L. Frazer, who afterwards practised in the island of Nevis. Mary Reid, a woman thirty years of age, was taken ill of a dysentery, which in three weeks time killed her. In her life-time she complained more than ordinary of gripes in her belly, especially in her left side. Her body was opened in presence of Dr. Dundas, who had attended her during her illness. All the intestines and mesentery were inflamed, especially the colon and rectum; the internal side of which was quite in a mortified state, and contained little vesicles full of a putrid fetid liquor, numbers of which she had evacuated by stool some days before her death.

In January 1766, a woman died in St. George's hospital of a violent diarrhoea: she had passed with her stools a number of vesicles, such as those mentioned by Dr. Frazer. On examining her body, we observed a number of small prominences on the inside of the colon and rectum, with erosions of the villous coat

Since my return from Germany, I have had an opportunity of examining the dead bodies of many who died of old dysenteries, where the appearances were similar to those I had observed while I was with the military hospitals. There was in all of them a number of livid, black, gangrenous-like spots, in both the colon and the rectum, but which were most frequent in the rectum. On examining them accurately, they were found to be occasioned by black dissolved blood, or other liquors, diffused through the cellular membranes, situated between the fine internal villous and the muscular coats of the intestines; and in the middle of these black spots, there was generally more or less of an erosion of the villous coat. On raising up the villous coat which covered them, it appeared fine and transparent in the places where it was entire, though the cellular

in their middle. On squeezing these prominences, a number of vesicles full of a watery liquor, some of the size of millet-seeds, and others larger, came through the erosions of the villous coat, and were exactly similar to those she had passed by stool,

Morgagni, in his book *De Sede & Causis Morborum*, epist. xxxi. is of opinion, that the filaments, and pieces of membranes, which are frequently observed in the stools, are often formed of inspissated mucus and lymph, and other liquors; and not the fibres, or pieces of the villous coat of the intestines, as alleged by many authors,

membrane

membrane below was black and inky; and on dissecting away this black cellular membrane, the muscular fibres of the gut appeared of their natural colour; though in one subject some of the black dissolved liquors seemed to be diffused through the cellular membrane which connected together the muscular fibres of the rectum.

In some subjects, these black spots and erosions of the villous coat were very frequent; and in one woman who died of the dysentery, the villous coat was entirely abraded from the rectum; and in this body the colon, after forming the great arcade, adhered on the left side to the peritoneum, and there was an abscess of about an inch long in the middle of the adhesion; and upon squeezing gently the gut both above and below this part, the fæces came through into the cavity of the abdomen; so that in all probability, if the patient had lived but a few days longer, the fæces would have been discharged into the cavity of the abdomen.—In a soldier who died of a suppuration of his liver, and an old dysentery, which he had contracted five years before in the East Indies, there was a number of abrasions of the villous coat, particularly in the great sac of the colon, and below it,

it, which appeared exactly similar to those we had seen in the middle of the black or livid spots ; and we conjectured that probably there had been originally black spots at these parts ; but that the blood, or other extravasated liquors, had been absorbed, when the malignancy of the disorder had abated ; for from the time I first saw him, which was some months before his death, what loose stools he had seemed rather to proceed from weak lax intestines, and an absorption of matter from the abscess in the liver, than from any remains of the original disorder, the dysentery ; for they were composed of liquid fæces, and not made up of mucus and blood, as those of dysenteric patients commonly are.

In two subjects, I observed some livid spots on the outside of the gut, which, on examination, were found to be occasioned by black extravasated liquors lodged in the cellular membranes between the peritoneum and the muscular coats of the intestines ; but there were no erosions at these parts.

I have never myself seen similar erosions of the villous coat of the small guts, in any of the bodies of those who died of dysenteries ; but lately Mr. Glass, an ingenious surgeon

geon in the service of the honourable the East India company, to whom I had formerly shewn the erosions of the villous coat of the great guts, told me, that in his two last voyages to the East Indies, he had had an opportunity of examining the bodies of several people who had died of the true dysentery, and that in all of them he had found black spots with erosions in the middle, in the rectum and colon; and that in two the lower part of intestinum ileum was affected in the same way, and ulcerated.

From the accounts we have in authors of the dissections of persons who have died of the dysentery, it should appear that there is no part of the alimentary canal that has not been found inflamed, or in a state of gangrene or of suppuration; and that the liver, spleen, and other viscera, have at times been found diseased; but that the rectum and colon have been affected more or less in all.

Bonetus * mentions, from Fontanus, a case where there were found more than 200 little ulcers, mixed with imposthumes, from the beginning of the colon to the end of the

* See Boneti Sepulchret, Anatomic. tom. ii. lib. iii. cap. xi. observ. 2. p. 168.

rectum. Some of those ulcers had eroded the whole intestine, and between them there were parts of the intestine which were whole and entire.

Dolæus says, that both the small and great guts are affected by this disorder; for in the bodies of six people who had died of the dysentery, which he opened, he found the small as well as the great guts black and sphacelated, and full of purulent tubercles.—In one of them the pylorus of the stomach was sphacelated and corroded, and the patient before his death had had a constant vomiting, and was carried off by strong convulsions.—He adds, that he opened other two bodies, in which there were no ulcers, but the whole intestinum rectum sphacelated. Vide Johan. Dolæi Encyclopædiæ, lib. iii. cap. 5. De Dysenteria.

Mr. Cleghorn, in his Observations on the Diseases of the Island of Minorca, in treating of the dysentery says, “ Upon opening the
 “ bodies of the dead, I have constantly found
 “ the great guts either entirely mortified, or
 “ partly inflamed, partly mortified : in many
 “ I have seen schirrhous tubercles straitening
 “ the cavity of the colon in several places ;
 “ in a few there were small abscesses in the
 “ cellular

“ cellular membrane of the peritoneum, con-
 “ tiguous to the colon and rectum; some-
 “ times the small guts were perfectly sound
 “ in appearance, but more frequently the
 “ lower part was inflamed, the convolutions
 “ being often preternaturally connected to
 “ each other by membranes, as the lungs
 “ sometimes are to the pleura. In two people
 “ the omentum was almost entirely wasted,
 “ the small remains of it being quite black,
 “ while purulent water was found in the ca-
 “ vity of the abdomen. In several it was in-
 “ flamed, and adhered both to the guts and
 “ peritoneum. For the most part, the gall-
 “ bladder was full of dark bile, and the
 “ spleen more or less in a putrid condition.”

See chap. v. page 227. 2d edition.

Sir John Pringle mentions the case of a
 soldier *, who died of a dysentery which had
 continued near four weeks, in whom the
 larger intestines were found black and putrid,
 their coats were preternaturally thick, and
 ulcerated on the inside, especially in the rec-
 tum, and lower part of the colon, where the
 villous coat was either abraded, or changed
 into a corrupted slimy substance. The cœcum

* Observ. on the Diseases of the Army, part iii. ch. 6. § 2.
 4th edit. p. 246.

and

and its appendix were less corrupted, and the smaller intestines and stomach were neither mortified nor abraded, but only distended with air.

Both he * and Sir George Baker † give an account of the dissections of the bodies of some people who died of the dysentery, which was epidemical in London in autumn 1762, where, besides the inner surface of the rectum and colon being covered with a bloody slime, and their internal coats being inflamed, gangrened, or in a putrid state, there were observed on the inside of the lower part of the colon, and of the upper part of the rectum, a number of little tubercles or excrescences, which resembled the small-pox, of a flat sort, at the height of the disorder, but which differed from them in this, that they were of a firm consistence, without any cavity, and were believed to take their rise from the cellular membrane which lies immediately above the villous coat. They both seem to believe that the villous coat had not been separated.

Such are the most remarkable appearances that have been observed in the dissections of

* Observ. on the Diseases of the Army, 4th edit. p. 251.

† De Dysenteria epidemica anno 1762.

the bodies of those who have died of the true dysentery; many authors, indeed, have given us accounts of the dissections of people who have died of old complaints of the bowels, which at last terminated in a purging, which they have called a dysentery, though the disorder had no title to that name, at least to the disorder we are now treating of.

S E C T. VI.

Of the remarkable differences of success in treating of recent dysenteries, and those who have already continued for some weeks.

THERE was no disorder we were more successful in the cure of, than recent fluxes; but after they had continued for weeks, and were become in a manner chronic, they often foiled all our endeavours, and a great number died †.

UPON

† Mr. Cleghorn, in his Account of the Diseases of the Island of Minorca, says, “ That almost all the dysenteries which fell under my observation, unless they were speedily cured in the beginning, at best proved obstinate, and too frequently fatal, in spite of the many boasted specifics for this distemper.” chap. v. p. 228.—The physical gentlemen employed on the American service have told me, that the old flux cases were as fatal in America, as we found them in Germany.

Upon my first being employed in the military hospitals in Germany, I was surprised to see so many of the old dysenteric cases end fatally ; and imagined I had not fallen upon the right method of treating them : but upon consulting the other physical people employed in the same service, I found them as unsuccessful, as myself, after having tried a variety of remedies : and at last, I was convinced, that the disorder will often end fatally, notwithstanding the use of what are esteemed the most efficacious remedies, when once it has continued long, and injured the structure of the intestines to a certain degree ; and that, when this disorder is violent, the cure principally depends upon an early and speedy application of proper remedies, before the strength be exhausted, or the structure of the bowels too much hurt. The bad success we had in treating these old cases, may, perhaps, surprise those who have never practised except in healthful cities, where the

many. I would not from thence have it believed, that every old flux was to be looked on as a lost case ; and for that reason given up, and no attempts be made to cure it ; for many, by great care, and strength of constitution, have gradually surmounted the disorder, and recovered their health ; especially when they got over the winter, and lived till the warm weather began.

disease

disease is commonly mild, and people apply soon for advice. But all those gentlemen who have had the care of military hospitals, where the dysentery has been frequent, and where the sick have often been sent a great way, before they reached the hospitals, must be convinced of the truth of what is here asserted.

And from the account we have given of the state in which the great guts are generally found, in those who die of old dysenteries, it is not surprising that medicines have so little effect, after the disorder has continued for some weeks; or that a purging should often continue to waste the patient and to hurry him to his grave, after the original disorder has been entirely got the better of; for the mildest excrement proves too great a stimulus, where the fine villous coat has been abraded from the surface of the gut †.

† Dr. Hoffman takes notice of this state of the intestines, for in treating of slow hectic fevers, he observes, that there is a kind not much attended to by authors, which may be called *Stomachica and Intestinalis*, which takes its rise from erosions of the villous coat of these organs, occasioned by acrid substances swallowed down, or by the cholera morbus, or by the dysentery. See Hoffman. Oper. tom. ii. § 2. cap. xiii. p. 177.

S E C T. VII.

Of the cure in the first stage of the disorder.

IN the treatment of this disorder, as well as of the malignant fever, nothing contributed more to the cure, than keeping the sick as clean as possible, and in large airy wards.

Of bleeding.

Most of the recent fluxes, which I saw, were at first attended with a good deal of fever, and pain in the bowels ; and required more or less blood to be taken away, according to the strength of the patient, and the violence of the symptoms. The inflamed or eroded state, in which the intestines are commonly found in those who die of dysenteries, should seem to indicate that bleeding was necessary in most recent cases.

When the patients were strong, and complained of sharp pain of the bowels, attended with a fever, we used the lancet freely ; nor were we discouraged from bleeding in the beginning by the low quick pulse which often attended the disorder ; and we frequently found

found the pulse rise as the blood flowed from the vein. But when the sick were low and weak, without much pain or fever, and the pulse was soft, we were more sparing of the vital fluid.

Although bleeding, in the beginning, has been recommended by doctors Sydenham, Hoffman, Huxham, and other practitioners; yet it has been reckoned unnecessary in this disorder by some late authors. But in most of the recent cases I saw, it was extremely necessary, and contributed greatly to the relief as well as to the cure of the patient; indeed, where the disorder had already continued some time, and the fever was gone off before the patient was sent to us; and the disorder had become in a manner chronic, and the patient low, then bleeding was unnecessary, and would have probably done hurt. Mr. Francis Ruffel told me, that when the dysentery was epidemical at Gibraltar, in summer 1756, he found that by bleeding such patients as he met with at the first coming on of the symptoms, and by giving them immediately a vomit, and afterwards a sudorific draught, the disorder was rendered mild, and few of those died.

Of vomits.

As the disorder was for the most part attended with sickness in the beginning, we gave a vomit after bleeding; which not only discharged the contents of the stomach, and a quantity of bile, but relieved the sickness, and frequently threw the patient into a breathing sweat; and made the purgatives which were given next day operate more freely, and with more evident good effects than where no vomit had been administered.—If in the course of the disease the sickness returned, the emetic was repeated; and we often observed, when the flux was obstinate, that well-timed vomits greatly promoted the cure.—The vomit we commonly employed was the powder of ipecacoanha, which we gave from ten to twenty grains; and where the patient was strong, and we wanted to make a free evacuation, we added one, two, or three grains of the tartar emetic; which encreased the strength of the vomit, and commonly operated likewise by stool; and since my return from Germany, I have frequently given with advantage a grain of tartar emetic, dissolved in two ounces of water, every quarter of an hour

hour till it vomited freely, or both vomited and purged the patient; and the late Mr. William Ruffel, who was with the hospital at Martinico, told me, that, when he was there, he found the vomit with the tartar emetic to be far preferable to any other, in all cases where there was much putrid bile lodged in the alimentary canal; as it speedily carried off those corrupted humours, which were often productive of the greatest mischiefs, if they remained, but for a short time, pent up within the bowels.

Of purging medicines.

Next day we ordered a purge to empty the other parts of the alimentary canal. The purgative, that at first was most employed for this purpose, was rhubarb; but upon repeated trials we did not find, that, in general, it answered so well, in this first stage of the disorder, as the *sal catharticum amarum*, with manna and oil; which operated without griping or disturbing the patient, procured a freer evacuation, and gave greater relief than any other purgative medicine we tried. Mr. Francis Ruffel, surgeon to the British military hospital in America, who was for-

merly surgeon to the island of Minorca, was the first person who informed me (in the year 1757) of the use of the sal catharticum amarum in the dysentery; he told me, that the year before (1756) the dysentery had been very frequent and very fatal at Gibraltar; and, after trying variety of medicines, he had found nothing give more relief, or contribute more to the cure, than repeated doses of these salts.

It is long since salt purging waters have been used for curing this disorder; for Fallopius * recommends greatly the use of the waters called Salmacidas, or Tettutio, at Mount Catinum in Pistorio, for the cure of dysenteries and ulcers of the intestines. And Baccius † says, that these waters may be looked upon as a remedy sent from heaven for the cure of the dysentery; for that he has seen many who were extenuated and exhausted, and whose cases seemed to be quite desperate, recalled (as one may say) to life, by drinking daily from a pound to three pounds of these waters.

Dr. George Monro, and the late Mr. William Ruffel, who were both employed in the

* Fallopius de Aquis.

† Baccius de Thermis.

military hospitals during the late war in North America, told me, that the common purging medicine which they used in recent dysenteric cases, was a solution of four or five grains of tartar emetic, and two ounces of manna in a pint (℥. i.) of water; of which they gave three or four ounces every half hour, till it both vomited and purged the patient freely; and that it commonly produced good effects.

From an accurate observation of the many cases which I have had under my care, I am convinced that those purgative medicines which operate with the greatest ease to the patient, and make the freest discharge by stool, will always answer best in recent dysenteric cases; and that the resinous drastic purges which occasion much griping, and pain, and sickness will in general do hurt. /

As a great part of the cure depended on the frequent use of gentle purges* in the begin-

* Variety of medicines have been recommended to answer this purpose.

The vitrum ceratum antimonii proved often too rough a medicine, and therefore we laid it almost entirely aside.

Repeated small doses of the ipecacoanha, from four to six grains, operated both as an emetic, and kept up a purging; but they made the men so sick, that we could not prevail upon them to continue their use. Mr. Francis Russel told me, that

Vide Abercrombie. 1827. Z 4 in

beginning, to carry off the corrupted humours ; the purgative was repeated every second

in the year 1756, he found a few grains of rhubarb added to each dose, made it operate more as a purgative, and did not make the men so sick.—Dr. Akenfide proposes giving the ipecacuanha in so small doses as one or two grains every six hours, in a draught made of mint-water, and half a drachm of confectio cardiaca ; and, after bleeding and vomiting once, seems to depend almost entirely on the use of this medicine for the cure of the dysentery. See his Comment. de Dysenteria, cap. 2.

The watery tincture of rhubarb, recommended by Degnerus, we tried in some cases at Bremen ; and found it to be a good mild purge, but not to answer so well as the salts and manna in recent cases. Mr. William Russel told me that they found this watery tincture of rhubarb to answer better in America than any other of the preparations of rhubarb.

Calomel has been recommended by many as a purge in dysenteries ; and Dr. Huxham (De Aere, vol. II. p. 100.) assures us, that he has often experienced the good effects of it, especially when the patient at the same time had worms ; in such cases we joined it to rhubarb as mentioned above, or gave a calomel bolus over night, and a purge next morning.

The late sir William Duncan, physician to his majesty, told me, that he found the following method of cure successful in the dysentery, which was epidemic in London in the year 1762.

If the patient was plethoric, or had much fever, he ordered more or less blood to be taken away ; and then gave four ounces of the following julep, every half hour, till it both vomited and purged. R Tartar. emetic, gr. iij. mannæ elect, unc. ij. solve in aq. hordeat. ℥. j.—The next day, and for five or six days more, the patient took so much of a decoction of manna, tamarinds, and soluble tartar, as kept up a free discharge by stool.—If the irritation and griping were severe, he

cond, third, or fourth day, as the case required; the operation of the former purge, and

he found that a solution of manna, in the common almond emulsion, was sufficient.

When the pain, or tenesmus, was violent, a clyster, of chicken broth, or of an infusion of linseed, with an ounce or two of oil of sweet almonds dissolved in the yolk of an egg, injected once or twice a day, was of great use.

Upon the whole, he was always pleased when he saw large excrementitious stools come away; and when that could be procured by a gentle method, he was the more pleased.

This disorder was very often cured in a few days, and in that case he dropt the farther use of medicines; but when it exceeded the period of six or seven days, he then added thirty or forty drops of the tinctura thebaica to the clysters; and ordered a scruple of the extract of the logwood to be taken thrice a day in some proper vehicle.

The patient's diet was rice-gruel, sago, panada, and such like; no animal food, not so much as chicken-broth, was allowed in the beginning of the distemper, not even oil, butter, or fat of any kind. The common drink was almond emulsion, rice-water, or barley-water with gum Arabic.

Sir William said, that he lost but one patient out of eighty, whom he had under his care that season; and he was delirious, had a high fever, and a subsultus tendinum before he was called to him, and he died the next day.

The late Dr. Young, of Edinburgh, seems to have had a very just notion of this disorder, and of the proper method of treating it; for, in his Treatise on Opium, sect. vii. he says, "I am convinced from experience, that most of the dysenteries I have hitherto met with, might have been cured by purging mildly, but constantly; and at the same time abating the acrimony in the great guts by emollient clysters, and in the small ones by plenty of absorbents, and a diet of chicken broth: but it must be observed with regard to purgatives

and the symptoms, determining the frequency of the repetition. It was surprising with how little loss of strength the sick bore the operation of these purges; I have sometimes given them to strong people every day, for two, three, or four days successively; and observed that the patient, instead of being weakened, seemed stronger, and more brisk and lively, after the operation of each, from the relief it gave; by evacuating those putrid, corrupted humours, which kept him perpetually sick and uneasy, while they remained within the bowels.

And, indeed, for the first twelve or fifteen days it was seldom proper to give any other sort of medicines but those of an opening kind, and plenty of mild diluting liquors; for opiates and astringents at this time for the most part increased the griping and pain of the bowels, instead of giving any relief. However, as there is no general rule in physic without exception, so it happened in the present case, that we sometimes found it of use to give an opiate at night sooner in the

“gatives, that manna agrees best with some, rhubarb with
 “others, jalap, mercury, and toasted rhubarb with others;
 “while others are sooner cured by emollient clysters. I use
 “opium only when the disease is mild, or after its violence is
 “abated by evacuants and emollients.”

dis-

disorder, where the patient complained of much griping pain and uneasiness after a large discharge by stool from the free operation of a purge.

Though rhubarb did not answer so well in the beginning as the saline purges; yet afterwards in the course of the distemper, when the patient did not complain much of gripes, half a drachm of rhubarb, either by itself or in a saline draught, proved a good gentle purge; and given with six or seven grains of calomel, was found to be a good medicine, when the disorder was attended with worms.

Of opiates.

After the first twelve or fourteen days, we gave in the evening, after the operation of the purge, an opiate; and repeated it at nights, in the intervals between the purges†; but were obliged to be very sparing of the dose, while the disorder continued in its acute state; the opiate was only given in a quantity sufficient to mitigate the pain, and to procure rest, but never so as to stupify the

† The greater number of those which came to the hospital from the army had been twelve or fourteen days ill before they were sent down to us,

patient,

patient, or prevent a due discharge by stool ; though we were often obliged to encrease the dose, as use made it familiar to the patient.

In the intervals between the purges, we gave in the day, the Mindereri draughts with the mithridate ; or the saline draughts with the addition of four drops of the tinctura thebaica ; or some such mild diaphoretic, every four or or six hours ; which helped to keep up a free perspiration, without any danger of stopping the purging ; and for the most part answered much better than the diascordium or philonium, or other strong astringents and opiates commonly prescribed for this purpose ; which were always liable to check the purging too much, and bring on severe gripes attended with heat and fever* ; and therefore we seldom made use of them in this first stage of the disorder.

Practitioners have been much divided in their sentiments with respect to the use of opium in this disorder ; some recommending it as the most efficacious remedy, while others affirm it to be the most destructive.—From

* Sydenham, Huxham, and all good practitioners, have taken notice of the bad effects of the too free use of astringents, and given cautions against it,

the observation of many hundred of cases, I think, as I have observed before, that in general for the first twelve or fourteen days, it had better be omitted altogether, and the cure trusted to the repeated use of purgative medicines, and the free use of mild diluting liquors, giving clysters, emetics, mild diaphoretics, or taking away ten or twelve ounces of blood as the case may require.

That after the first twelve or fourteen days, mild opiate diaphoretic medicines given in the intervals, between the use of the purgatives are useful to procure the patients rest at night, to recruit their strength, and to procure a respite from the excruciating pain which renders them quite miserable ; and to assist in promoting a free perspiration ; but that at this time opium must only be given in such quantity as to answer the ends proposed, but never to stop the discharge by stool.

That in old dysenteries where the disorder has become in a manner chronic, the free use of opium is often absolutely necessary, being the only remedy hitherto known capable of giving relief, and procuring to the patient sleep and respite from his pain.

How-

However, in whatever stage of the disorder opium is administered it must be done with caution, and care taken that it does not prevent the due discharge by stool; and therefore it ought either to be given in small doses, or, if used freely, as is sometimes necessary in old cases, opening medicines ought to be given at proper intervals to prevent any bad effects from its use.

Of the tenesmus and gripes.

If after the first twelve or fourteen days the patient was attacked with severe gripes †, and a tenesmus, which purgatives and gentle opiates did not relieve, we ordered the abdomen to be fomented with warm stupes; and the patient to drink freely of warm barley or rice-water, or of weak broth ‡, and some-

† If the patient was suddenly attacked with sharp pain of the bowels and gripes, on a day in which he had not physic, a dose of the salts and manna was commonly given immediately, to empty thoroughly the first passages.

‡ Mr. W. Russel told me, that he found the free use of the following emulsion, made of bees wax, to be of great use after evacuations, where there was much pain of the bowels, in recent cases of fluxes in the hospitals in America. *R. Cerae alb. vel flavæ drachmes tres; sapon. alb. Hispan. drachmam unam; aquæ fontanæ, unciam unam, liquefiant super ignem*
in

sometimes of an infusion of camomile flowers, as recommended by sir John Pringle; and ordered first clysters of large quantities of the plain emollient decoction to be given; and if the gripes still continued, to be repeated in small quantities, with the addition of a drachm or two of the tinctura thebaica; for we observed that opiate clysters often gave more relief, than anodynes administered in any other way; and sometimes when a tenesmus was very troublesome, the common oily clyster, with a little diascordium and tinctura thebaica, or the starch clyster with opium, gave more ease than any other.—In some cases, where the pain was sharp, attended with a fever, we were obliged to take away more or less blood.

Of diet and drink.

During this course, the patients used the common low diet of the hospital; when they

in vase ferreo, agitando spatula, & dein infunde in mortarium marmoreum, & adde paulatim aq. fontanæ, libras duas syrupi sacchari, spiritus vini Gallici tenuis, vel aquæ alicujus spirituosæ ana unciam unam, terendo optime ut fiat emulsio.

This method of dissolving bees wax, in a watery liquor, is entirely new; for before this we knew of no way of making it miscible with water.

loathed

loathed the rice-gruel, they had panada with a little red wine and sugar; or water-gruel, when it could be got, in its place.—Their common drink was barley or rice-water; of which it was recommended to them to drink plentifully; as nothing contributed more to the cure than the free use of such liquors, to dilute and blunt the acrimony of the fluids.

In the military hospitals we were obliged for the most part to confine the sick to the drinks here mentioned; but in private practice a greater variety may be allowed, such as baum tea, toast and water, almond emulsion, very weak chicken broth, and other mild liquors.—Baglivi * tells us, that drinking of common cow-milk whey, and throwing it up by way of clysters had cured many; and that this remedy was looked upon as a specific, and kept a secret by some people.—And Dr. Hoffman † informs us, that when the dysentery was frequent in the county of Minden, in the year 1684, the peasants through the whole course of the disorder drank milk and water, or whey, and received great benefit from its use—and that in the year 1726, when the dysentery was

* Praxis Medic. lib. i.

† Hoffman. Oper. tom. iii. § 2. cap. vii. p. 162.

epidemic in the county of Altenberg, many of the country people drank freely of buttermilk and whey, took no other remedies and escaped much better than their neighbours. —And Dr. Huxham * observes, that there is no disorder in which a diluting, sweetening drink is more necessary than in this; that he has done great service among the poor by lukewarm water; that after emptying the bowels thoroughly, he has sometimes cured this disorder by the use of pure water, and a small quantity of opium.

In some cases, when the purging was violent, after the first twelve or fourteen days, and there was not much pain, heat, or fever, the decoctum album was found to be a good drink; and we added occasionally a few drops of the tinctura thebaica.

In treating of the causes of the dysentery, I mentioned that eating of ripe fruit which was formerly believed to give rise to it, had of late been recommended as a cure; and I mentioned some instances of cases which Dr. Tissot tells us were cured by the use of ripe grapes. —I have since heard of some recent cases which were alledged to be cured by

* Huxham De Aere, vol. ii. p. 107.

eating freely of ripe peaches; and Traillan† tells of others who were cured by eating plums and grapes. As I have had no opportunity of seeing the effects of fruit in this disorder, I shall leave it to future experience to determine how far it may be of service, and under what circumstances it may be used with most advantage.

S E C T. VIII.

Of the cure in the second stage of the disorder when it has already continued some weeks, and become in a manner chronic.

SUCH were the chief remedies we used in the first stage of this disorder; but after some weeks, when the fever had abated, and free evacuations had been made, and the complaint become in a manner chronic, we were obliged to try other methods; and found that the best way of treating this disorder, was to endeavour to brace and restore the tone of the intestines, by means of a mild, soft, nourishing diet, and the use of the corroborating and gentle astringent medicines, mixed with opiates; while mild purgatives were given at proper intervals.

† Traillan. lib. viii.

The patients were kept to the same diet as before, with the addition of a little wine or brandy when they were low. They were allowed from a gill to a pint of red wine per day, which was commonly mulled before it was given them; when the wine griped them, which it frequently did, they took in its stead half a gill of brandy, mixed with a pint or a quart of barley or rice-water, or of the decoctum album.

In this stage of the disorder we found, that the same medicines would not answer with all, and therefore we were obliged to try variety*; and indeed, unless where the

vio-

* Sir John Pringle, in the fourth Edition of his Observations, in treating of the third or last stage of the Dysentery, remarks, that this is the time for astringents, which ought not to be given sooner, or at least very sparingly. And he tells us, that, in the former editions of his work, he mentioned those compositions which he had most frequently used, but that he had now laid most of them aside; and at present trusted to vomits, and to a milk diet, for the perfect cure.

He says, “ Whenever therefore the patient is in this state, and especially when his pulse is quick, and he complains of inward heat, I began with giving him a scruple of ipecacuanha; and the next day I put him upon the milk-diet; which I continue till all the hectic symptoms are gone, and till the bowels have recovered their tone. During this course I have seldom had occasion for any other medicine, excepting the chalk julep mentioned before, which I use for correcting that strong acid so incident to relaxed stomachs. Sometimes also I add an opiate to procure rest at

violence of the disorder had abated by the use of evacuations, the event was always very doubtful; for when the complaint had continued long and become chronic, and the structure of the intestines was much hurt, before the sick were sent to us; or when it continued obstinate, and yielded but little to evacuation, and the other methods used in the first stage, even remedies esteemed the most efficacious oftentimes proved unsuccessful, and at length the patient died. And when we consider in what state the bowels often are after this disorder has continued for weeks, we cannot wonder at medicine having often so little effect.

Opium, which in general is to be avoided, or used with great caution in recent cases, was often useful, nay absolutely necessary in old ones, in order to allay the violent irritation and spasms of the bowels, and to pro-

“ night; but after a few days these are likewise laid aside.
 “ All that I require (which indeed is often hard to obtain) is
 “ a strict perseverance in the low diet: and now and then a
 “ repetition of the vomit, upon any new disorder of the sto-
 “ mach, or great laxity of the bowels.

“ Whilst the patient continues in this course, I forbid all
 “ animal food and fermented liquors; and besides milk, I al-
 “ low only the preparations of grain, sago, and salop.” See
 Part iii. ch. vi. p. 289, 290.

cure

cure the patient rest ; and therefore we were often obliged to mix it with most of the remedies which we gave in this stage of the disorder.

A spoonful of the mixtura Fracastorii, taken after every loose stool, and an anodyne draught at night, had a good effect with some.—Repeated doses of the philonium Londinense answered better with others, who were low, and required a remedy that was warm and cordial—And others found more benefit from the Mindereri draughts, with mithridate, or the confectio cardiaca, or the theriac anodyne boluses.

The mixtura Campechensis, both alone and with tinctura thebaica, checked the purging, and gave relief sometimes ; and the addition of some of the extract of bark and tincture of cinnamon, seemed to encrease its efficacy in one or two old cases, at Bremen ; but it afterwards occasioned such sickness, that we did not continue its use.

In other inveterate dysenteries, where we thought that a strong astringent was wanted, we added a small proportion of allum to the Campechense julep, which on first using seemed to be serviceable ; but at other times it occasioned a tenesmus and gripes ;

A a 3 and

and therefore we were obliged to be very cautious how we used it.

Equal parts of the electarium diascordii and electarium corticis, taken in the quantity of a drachm twice or thrice a day, was of use in many old fluxes *, though it made other patients so sick, that they were obliged to lay it aside.

The late Dr. John Hume, whom I have mentioned more than once before, gave me the following account of the good effects of the bark in this disorder. “ In the year 1759, “ when I was surgeon on board the New- “ ark, I had several people under my care “ who were ill of dysenteries. At first I lost “ some; but observing that towards the “ morning the sick were always remarkably “ easy, and free from griping, or much

* I had a very remarkable instance of the effects of this medicine, in the case of one Gilchrist, a middle-aged man, by trade a taylor, who was admitted into St. George’s hospital the 20th of July, 1763, for an old flux, which had continued above six months, and reduced him very low: he had taken a great many medicines without any effect. After giving him a vomit and two doses of tincture of rhubarb, I gave him four grains of the powder of ipecacoanha with opium three times a day; but that having no effect, after using it for above a fortnight, I ordered him the electary of diascordium and bark. From the time he began to use this medicine, he mended daily; and was dismissed in good health the 26th of September. Since that time I have given the bark with equal good effect in many similar cases.

purgings,

“ purging, and towards noon all their com-
 “ plaints, with tormina and thirst, returned,
 “ I resolved to make trial of the bark, which
 “ I gave in substance to the quantity of a
 “ drachm, or more, at a time, as I saw they
 “ could bear it. When their complaints re-
 “ turned, I desisted, and gave them the usual
 “ antidyenteric medicines for the remainder
 “ of the day, not sparing opiates at night.
 “ The success I had exceeded my most san-
 “ guine expectations. I sent my patients to
 “ the hospital at Gibraltar, as soon as we ar-
 “ rived in the Bay, acquainting the phy-
 “ cian with the method in which I treated
 “ them, who continued it with good effect.”

Dr. Hume thinks, that from the symptoms
 and effects of the bark, there probably was a
 mixture of an agueish disposition in the dy-
 senteries of this year, though it did not
 clearly manifest itself in form of regular in-
 termittent paroxysms ; for that he had tried
 the bark in other seasons, but not with equal
 success ; though he had at times found it an
 efficacious medicine in old cases.

We tried likewise, in this stage of the dis-
 order, repeated small doses of the ipecaco-
 anha ; but it occasioned such sickness, that
 we did not persist in its use.

In other cases, we gave from two to five grains of the ipecacoanha, mixed with opium, in different proportions (from three grains to ten of the ipecacoanha to one of the opium) every four or six hours; it gave sometimes a little present ease, at other times it occasioned sickness; we often continued its use for ten, twelve, or fourteen days; but it seldom produced any remarkable change for the better; and we were obliged to have recourse to other remedies.

Dover's powder was given in large doses, from one scruple to two; and proved a good sudorific and anodyne in some cases; though in others it made the patients sick, without producing any good effect.—It commonly answered better, when used occasionally as a sudorific, than when constantly continued.

Since the year 1764, I have often used the decoction of the simaruba bark, recommended by Mons. Jussieu and Dr. Degner, and given it from two to three ounces every five or six hours, either without or with four or five drops of tinctura thebaica, in dysenteric cases and old diarrhœas; and I have found it frequently to prove a very useful remedy*.

During

* Many other medicines have been used for the cure of old dysenteries.—In the Edinburgh Medical Essays, vol. iii, art.

During the use of these remedies, it was necessary to repeat the purgatives from time to time; or to mix them occasionally with the other medicines, in order to carry off any corrupted humours, or excrements that might be lodged in the cavity of the intestines; for when this was neglected, the patients were often seized with sickness and gripes, and a more violent purging than before:— and if at any time they complained of gripes, and passed little pieces of hardened excrements, it was mostly a certain sign that a purge was indicated; and, on such occasions, it gene-

4. the Conessi bark is recommended as a specific in diarrhœas, and is said to have cured a dysentery, which had yielded nothing to a variety of other medicines.—In the Memoirs of the French Academy of Sciences for the year 1719, the cortex eleutheriæ seu cascarillæ is much recommended for the cure of dysenteries, and is still much used among the Germans.

In the year 1762, when some of our troops put into the Cape of Good Hope, who had the dysentery frequent among them, some of the sick received great benefit from the use of a root, which was sold to them under the name of the Hottentot root. Mr. Mowbray, who was then surgeon to one of the men of war which convoyed the troops, discovered it to be a larger species of the Carolina root; and gave it in powder, from half a drachm to a drachm, two or three times a day, and found it to be a useful remedy in some old cases.—Dr. Turnbull, who formerly practised at Smyrna, told me that he had cured some old dysenteries, by the use of pills made with equal parts of Peruvian bark and gum mastich, and a sufficient quantity of syrup, given the length of two drachms a day.

rally

rally gave relief; and when attended with sickness, a vomit was given before the purge. —Clysters were used as in recent cases, where the sick were low, or had much pain of the bowels *, or complained of a tenesmus.

In

• On the 21st of November, 1759, Hannah Meredith, a middle-aged woman, was admitted into St. George's hospital for a flux, which she had had six or seven weeks; she had no fever, but complained much of sickness and gripes, and her disorder had reduced her very low. During the two first weeks of her being in the hospital, she had two vomits of ipecacoanha, and four doses of rhubarb; and in the intervals anodyne and astringent medicines, which made no alteration in her complaints. On the 2d of December, she told me, that two years before she had had a flux for above three months, which had yielded to no remedies till she was ordered repeated clysters, and that they had made a cure in a short time. I then ordered an emollient clyster, with a drachm of the electarium diascordii, and a scruple of the tinctura thebaica, to be given twice a day, which gave her almost immediate relief; and with the assistance of some doses of rhubarb, and one or two vomits and occasional opiates, removed her disorder by the middle of January; though she remained long weak, and troubled at times with gripes; but these complaints were at last got the better of by her taking some doses of rhubarb, and drinking daily a pint of lime-water mixed with half a pint of milk.

Sarah Spencer, a middle aged woman, was admitted into St. George's hospital the 9th of November, 1763, for a flux, which had continued for two months, and reduced her very low. She complained much of sickness and gripes; her stools were mostly composed of mucus and blood; her pulse was low, and she had no fever, but a whiteness of the tongue, and complained of thirst.—The first day she had a vomit, and next day

a dose

In some old dysenteries, where the villous coat of the intestines was much injured, I gave the cordial draughts, with the addition of half a drachm of the balsamum copaivi, a scruple of the extract of the bark, and five drops of the tinctura thebaica, three times a day. At first, this medicine seemed to promise much, particularly in the case of an old invalid, William Brookes; who had been long ill of a flux, attended with gripes and a tenesmus. He had used variety of remedies, without receiving any benefit. For the first fortnight after he began the use of this medicine, he rested well, and found great relief; and seemed to be in a fair way of doing well. But the disorder being too far advanced before he began to use it, he relapsed, and died. On opening his body, the inner coats of the rectum and the lower part of the colon was greatly eroded, and seemed to be reduced almost to a gelatinous substance, and the other coats were black, approaching to

a dose of the purging saline oily draught.—She was ordered to have an emollient clyster, with a drachm of diascordium, and as much tinctura thebaica, given her every evening; and to have a dose of the saline oily purge twice a week, and opiates occasionally. By following this course, and drinking at times the chalk julep, her disorder was removed, and she was discharged the hospital on the 30th of the same month.

a state

a state of a gangrene. — The same medicine gave relief in other cases, but they were too far advanced before it was administered. In these cases, when the villous coat of the intestines was inflamed, and very irritable, the mucilaginous medicines, the pulvis e tragacantha, and such others, were of service; and frequently starch clysters and anodynes gave relief, when other remedies had little effect. Flour, boiled with milk, sweetened with sugar, and given for breakfast, proved a good palliative to some; and the starch and gum arabic, dissolved in water, a good drink to others. — Lime-water and milk, drank to the quantity of a pint or a quart a day, was of use to a few, though it did not agree with all.

S E C T. IX.

Of the treatment of the dysentery when complicated with the malignant fever.

IT was very common for the patients bad in the malignant fever to be seized likewise with the flux. Such cases were always extremely dangerous; and when the fever was bad, we were often obliged to neglect the flux, and only attend to the fever. — When the purging was violent, and appeared very

very early in the fever, it often sunk the patients, and soon carried them off: but where it was moderate, and did not appear till towards the height or the decline of the fever, it often proved a crisis to the disorder.

When such fluxes appeared early, attended with sharp pain of the bowels, and signs of inflammation, if the patient was strong, we began the cure with opening a vein, which the patient bore easily, and it gave relief; but when the symptoms were mild, without any acute pain, the bleeding was omitted.— Commonly the bowels were loaded with corrupted humours, when this symptom appeared; and, therefore, we found it of advantage to give a dose of the salts with manna and oil, or some other gentle purge, to carry them off; and in the evening an opiate, to ease the pain and procure the patient rest.

After this we gave the Mindereri draughts with mithridate; and as soon as the petechiæ appeared, or we observed any remissions in the fever, the patient took, every four or six hours, a drachm of an electary, composed of equal parts of the electarium corticis and the electarium diascordii; or a drachm of the powder of the bark, or a
 scruple

scruple of the extract, in the Mindereri draughts, with four or five drops of the tinctura thebaica; and we repeated the opiate in the evening, always proportioning the quantity of it to the effects of the former dose, and the violence of the purging.

This practice of giving the cortex with opiates in the dysentery is not new; for Dr. R. Morton, in his Appendix to his second Exercise on the Fevers, which appeared from 1658 to 1691, observes, that after the plague of 1666 had ceased, a fever from a milder poison, attended with gripes and dysentery, began to make its appearance. As the common methods of cure proved unsuccessful, and Dr. Morton observed exacerbations and remissions, he resolved to give the bark mixed with laudanum, and found it answer his expectation. The first patient to whom he gave it, was a man in Long-lane, who laboured under a tertian dysentery. Upon observing a remission, he ordered a drachm of the bark, mixed with a grain of opium, to be given every four hours for six times; and this removed both the fever and dysentery.—He says, he afterwards gave it, with equal success, in the quotidian dysenteries, where he observed exacerbations or remissions;

fions; and he adds, that he does not doubt but that it will answer as well in epidemical diarrhœas, and camp fevers attended with such symptoms.

Dr. Whytt of Edinburgh has given with success a strong decoction of the bark, mixed with the confectio japonica of the Edinburgh dispensatory, in the bad state of the dysentery, when the mouth and alimentary canal were threatened with aphthæ, and even sometimes after they had appeared. And Sir John Pringle * mentions his having given the decoction of the bark, with snake-root, and some drops of laudanum, in the dysentery complicated with the malignant fever.

On the second or third day, we repeated the purge; or, if the patient was weak, ordered a clyster to be administered in its place, in order to prevent the putrid fluids and excrements from being accumulated in the bowels:—In other respects we treated it as when the disorder was not complicated with the malignant fever.

This method, though it did not succeed with all, yet it answered better than any other I tried;—and it ought to be remark-

* See note to p. 245 of his 3d edition of his Observ. on the Diseases of the Army.

ed, that although it had such a good effect in cases attended with the malignant fever, or where the fever inclined to the intermit- tent kind, it did not answer so well in other recent cases, but often made the patients sick.

S E C T. X.

Of the treatment when complicated with cough or pleurisy, or inflammation of the lungs.

IN military hospitals, fluxes are liable to be complicated with other disorders, as well as with the malignant fever, especially with coughs, and pleuritic and peripneumonic symptoms, when the weather begins to be cold, in October and November.—In such cases, when the patients were strong, we were often obliged to bleed freely, to apply blisters, and in the beginning treat the disorder as inflammatory; having at the same time an eye towards the flux, in the other medicines we prescribed.

S E C T.

S E C T. XI.

Of the treatment of dropfical complaints succeeding the dysentery.

PATIENTS who have had the flux long, are apt to have their legs swell at nights; or to swell all over as soon as the flux has stopped. Such œdematous or anasarcaous swellings we treated nearly in the same manner as those which followed the petechial fever; only that we durst not at first be so free with the use of purgatives; for as the bowels remained weak and easily irritated, such medicines were apt to bring back the flux; and therefore, in the beginning, we were for the most part obliged to attempt the cure by diuretics and diaphoretics, and to be sparing of the use of purgatives, especially of those of the hydragogue kind; though if the swellings continued for some time after the flux was gone off, and the patients were strong, we then ventured to give purges at proper intervals:—And blisters and scarifications removed them in several instances both at Paderborn and at Osnabrug.

B b In

In December 1761, we had a case of this kind, where the oxymel scilliticum was of remarkable service. A soldier belonging to the guards, after a flux, swelled all over, and made but a very small quantity of water. He took medicines of different sorts for some weeks, but received no benefit till we gave him the oxymel mixture; after taking a few doses he made water very freely, and in large quantities, and the swellings of his body and scrotum began immediately to subside; and by continuing its use for a fortnight, the swellings entirely disappeared, and he recovered his health and strength.—The oxymel, at the same time that it promoted a flow of urine, kept his body gently open, but did not occasion any return of the flux.

At the beginning of January, 1762, one Carter, a soldier of the eleventh regiment of foot, laboured under an universal anasarca, which about two months before had succeeded a flux. He made but very little water, and that of a high red colour. He took variety of medicines, as purges, vomits, Dover's powder, lixivial and neutral salts with opiates, infusions of horse-radish, all without effect; till he was ordered small doses of calomel, three grains morning and evening. After

After the third dose he began to make water freely ; and by the 24th of January the swellings were all gone, and he was shipped off for England the 8th of February, having been discharged from his regiment. The ship, he went aboard of, was detained in the river Weser for above six weeks, and the malignant fever broke out aboard the transport. He took the distemper, and got well of it ; but towards the decline was seized with a return of the flux, which carried him off.

When these œdematous swellings came after the purging was stopt, if the patient's strength was not much exhausted, and he laboured under no other disorder, he commonly got the better of it ; but when the strength was gone before the swellings appeared, the disorder often ended in a confirmed dropsy, and at last in death ; and when the swellings were universal over the body, while the flux yet continued, it was a sign of great weakness, and they did not survive it long.

Having thus taken notice of the most remarkable remedies which have been used for the cure of the dysentery, I shall conclude this long chapter on that disease with some general remarks on the treatment of old or chronic cases.

S E C T. XII.

General remarks on the treatment of old dysenteric cases.

FROM what I have observed myself, and from the accounts of others, I am now convinced that such old or chronic cases as are not already too far gone, are most likely to be cured.

1. By keeping the patients on a low diet, composed principally of milk, sago, rice, sallow, and such other things as afford a mild balsamic chyle, to heal the eroded coats of the intestines; allowing weak broths, and a small quantity of white meat, as they recover their strength. The common drink to be barley or rice water, toast and water, Bristol water, almond emulsion, and such like. — By making them wear some additional cloathing, and guarding carefully against catching cold. Errors of diet and exposure to cold being the most frequent causes of relapses into this disorder.

2. By giving from time to time a dose of some mild purge; such as a little manna and salts; a solution of manna in almond emulsion;

sion ; twenty or thirty grains of rhubarb, in a saline draught, or such like, to empty the bowels of acrid humours or fæces ; and occasionally gentle emetics.

3. By the use of some of the mild astringents and corroborants.—The bark, with astringents and opiates, agreeing best with some—decoctions of the semiruba. with others—chalk in electaries, or juleps, with others—anodyne and astringent clysters with some—while others receive more benefit from other remedies—and several find themselves better when they use no medicines of this kind.

4. And by the occasional use of opiates, and a free air : and by moderate exercise on horseback, or in a machine in the convalescent state—and sometimes by the use of the cold bath ; for I have known some instances where people have received more benefit in a convalescent state from it than from any other remedy. And I ought not to omit mentioning, that I have seen some cases where evacuations had been used in the beginning, which, after they had continued for some time, were cured by a regular diet of broths, and white meats ; riding daily on horseback ;

horseback ; and drinking a generous good claret wine. However, it ought to be remarked, that this method only succeeded where the disorder was mild, and its violence had abated by previous evacuations.

END OF THE FIRST VOLUME.







